7

Management of Working Capital

UNIT – I : MEANING, CONCEPT AND POLICIES OF WORKING CAPITAL

Learning Objectives

After studying this chapter you will be able to:

- Discuss in detail about working capital management, its meanings and its significance to any business/firm.
- Understand the concept of operating cycle and the estimation of working capital needs.
- Understand the need for a business to invest in current assets.
- Know why it is important to manage efficiently the current assets and current liabilities?
- Discuss the financing of working capital.

Overview

This chapter introduces you to the concept of working capital management i.e. management of the capital needed by a firm for its day-to-day activity. Here you also study the management of cash, marketable securities, accounts receivables management, account payable, accruals and different means of short-term financing.

Two most important points to remember while studying working capital management are:

(a) The optimal level of investment in current assets, and
(b) The appropriate mix of short-term and long-term financing used to support this investment in current assets.

The chapter also delves upon the different approaches to management of working capital with the objective of maintaining optimum balance of each of the working capital components.

Similarly, the different forms of financing which you have gone through in Chapter Five on Types of Financing also have an implication in this chapter. Here the sources of short term financing are re-visited.

7.1 Introduction

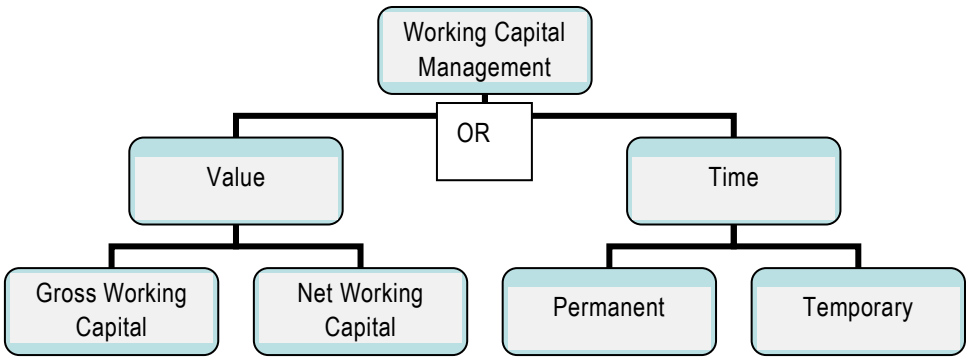
Working Capital Management involves managing the balance between firm's short-term assets and its short-term liabilities. The goal of working capital management is to ensure that the firm is able to continue its operations and that it has sufficient cash flow to satisfy both maturing short-term debt and upcoming operational expenses. The interaction between current assets and current liabilities is, therefore, the main theme of the theory of working capital management.

There are many aspects of working capital management which makes it important function of financial management.

- *Time:* Working capital management requires much of the finance manager's time.
- *Investment:* Working capital represents a large portion of the total investment in assets.
- *Credibility:* Working capital management has great significance for all firms but it is very critical for small firms.
- *Growth:* The need for working capital is directly related to the firm's growth.

7.2 Meaning and Concept of Working Capital

The concept of working capital can also be explained through two angles.



(a) Value : From the value point of view, Working Capital can be defined as Gross Working Capital or Net Working Capital.

Gross working capital refers to the firm's investment in current assets. Current assets are those assets which can be converted into cash within an accounting year. *Current Assets include*: Stocks of raw materials, Work-in-progress, Finished goods, Trade debtors, Prepayments, Cash balances etc.

Net working capital refers to the difference between current assets and current liabilities. *Current liabilities* are those claims of outsiders which are expected to mature for payment within an accounting year. *Current Liabilities include*: Trade creditors, Accruals, Taxation payable, Bills Payables, Outstanding expenses, Dividends payable, short term loans.

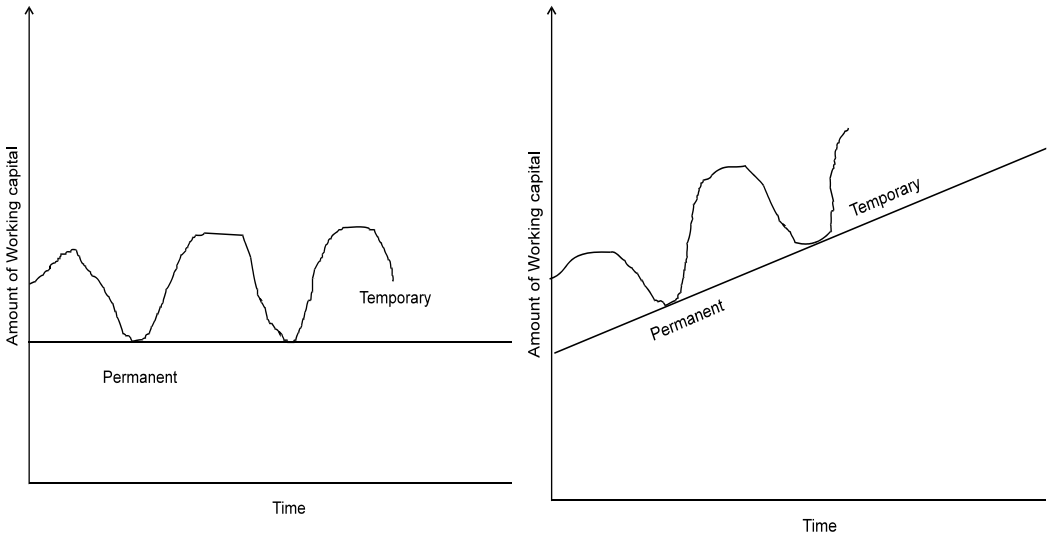
A positive working capital means that the company is able to payoff its short-term liabilities. A negative working capital means that the company currently is unable to meet its short-term liabilities.

(b) Time: From the point of view of time, the term working capital can be divided into two categories viz., Permanent and temporary.

Permanent working capital refers to the hard core working capital. It is that minimum level of investment in the current assets that is carried by the business at all times to carry out minimum level of its activities.

Temporary working capital refers to that part of total working capital, which is required by a business over and above permanent working capital. It is also called variable working capital. Since the volume of temporary working capital keeps on fluctuating from time to time according to the business activities it may be financed from short-term sources.

The following diagrams shows Permanent and Temporary or Fluctuating or variable working capital:



Both kinds of working capital i.e. permanent and fluctuating (temporary) are necessary to facilitate production and sales through the operating cycle.

7.2.1 Importance of Adequate Working Capital: Management of working capital is an essential task of the finance manager. He has to ensure that the amount of working capital available with his concern is neither too large nor too small for its requirements.

A large amount of working capital would mean that the company has idle funds. Since funds have a cost, the company has to pay huge amount as interest on such funds.

If the firm has inadequate working capital, such firm runs the risk of insolvency. Paucity of working capital may lead to a situation where the firm may not be able to meet its liabilities.

The various studies conducted by the Bureau of Public Enterprises have shown that one of the reasons for the poor performance of public sector undertakings in our country has been the large amount of funds locked up in working capital. This results in over capitalization. Over capitalization implies that a company has too large funds for its requirements, resulting in a low rate of return, a situation which implies a less than optimal use of resources. A firm, therefore, has to be very careful in estimating its working capital requirements.

Maintaining adequate working capital is not just important in the short-term. Sufficient liquidity must be maintained in order to ensure the survival of the business in the long-term as well. When businesses make investment decisions they must not only consider the financial outlay involved with acquiring the new machine or the new building, etc., but must also take account of the additional current assets that are usually required with any expansion of activity. For e.g.:-

- Increased production leads to holding of additional stocks of raw materials and work-in-progress.
- An increased sale usually means that the level of debtors will increase.
- A general increase in the firm's scale of operations tends to imply a need for greater levels of working capital.

A question then arises what is an optimum amount of working capital for a firm? We can say that a firm should neither have too high an amount of working capital nor should the same be too low. It is the job of the finance manager to estimate the requirements of working capital carefully and determine the optimum level of investment in working capital.

7.2.2 Optimum Working Capital: If a company's current assets do not exceed its current liabilities, then it may run into trouble with creditors that want their money quickly.

Current ratio (current assets/current liabilities) (along with acid test ratio to supplement it) has traditionally been considered the best indicator of the working capital situation.

It is understood that a current ratio of 2 (two) for a manufacturing firm implies that the firm has an optimum amount of working capital. This is supplemented by Acid Test Ratio (Quick assets/Current liabilities) which should be at least 1 (one). Thus it is considered that there is a comfortable liquidity position if liquid current assets are equal to current liabilities.

Bankers, financial institutions, financial analysts, investors and other people interested in financial statements have, for years, considered the current ratio at 'two' and the acid test ratio at 'one' as indicators of a good working capital situation. As a thumb rule, this may be quite adequate.

However, it should be remembered that optimum working capital can be determined only with reference to the particular circumstances of a specific situation. Thus, in a company where

the inventories are easily saleable and the sundry debtors are as good as liquid cash, the current ratio may be lower than 2 and yet firm may be sound.

In nutshell, a firm should have adequate working capital to run its business operations. Both excessive as well as inadequate working capital positions are dangerous.

7.3 Determinants of Working Capital

Working capital management is concerned with:-

a) Maintaining adequate working capital (management of the level of individual current assets and the current liabilities) AND

b) Financing of the working capital.

For the point a) above, a Finance Manager needs to plan and compute the working capital requirement for its business. And once the requirement has been computed he needs to ensure that it is financed properly. This whole exercise is nothing but Working Capital Management.

Sound financial and statistical techniques, supported by judgment should be used to predict the quantum of working capital required at different times. Some of the factors which need to be considered while planning for working capital requirement are:-

- *Cash* – Identify the cash balance which allows for the business to meet day-to-day expenses, but reduces cash holding costs.
- *Inventory* – Identify the level of inventory which allows for uninterrupted production but reduces the investment in raw materials and hence increases cash flow; the techniques like Just in Time (JIT) and Economic order quantity (EOQ) are used for this.
- *Debtors* – Identify the appropriate credit policy, i.e., credit terms which will attract customers, such that any impact on cash flows and the cash conversion cycle will be offset by increased revenue and hence Return on Capital (or vice versa). The tools like Discounts and allowances are used for this.
- *Short-term Financing Options* – Inventory is ideally financed by credit granted by the supplier; dependent on the cash conversion cycle, it may however, be necessary to utilize a bank loan (or overdraft), or to "convert debtors to cash" through "factoring" in order to finance working capital requirements.
- *Nature of Business* - For e.g. in a business of restaurant, most of the sales are in Cash. Therefore need for working capital is very less.
- *Market and Demand Conditions* - For e.g. if an item's demand far exceeds its production, the working capital requirement would be less as investment in finished good inventory would be very less.
- *Technology and Manufacturing Policies* - For e.g. in some businesses the demand for goods is seasonal, in that case a business may follow a policy for steady production

through out over the whole year or instead may choose policy of production only during the demand season.

- *Operating Efficiency* – A company can reduce the working capital requirement by eliminating waste, improving coordination etc.
- *Price Level Changes* – For e.g. rising prices necessitate the use of more funds for maintaining an existing level of activity. For the same level of current assets, higher cash outlays are required. Therefore the effect of rising prices is that a higher amount of working capital is required.

7.4 Issues in the Working Capital Management

Working capital management entails the control and monitoring of all components of working capital i.e. cash, marketable securities, debtors (receivables) and stocks (inventories) and creditors (payables).

Finance manager has to pay particular attention to the levels of current assets and their financing. To decide the levels and financing of current assets, the risk return trade off must be taken into account.

7.4.1 Current Assets to Fixed Assets Ratio: The finance manager is required to determine the optimum level of current assets so that the shareholders value is maximized.

A firm needs fixed and current assets to support a particular level of output.

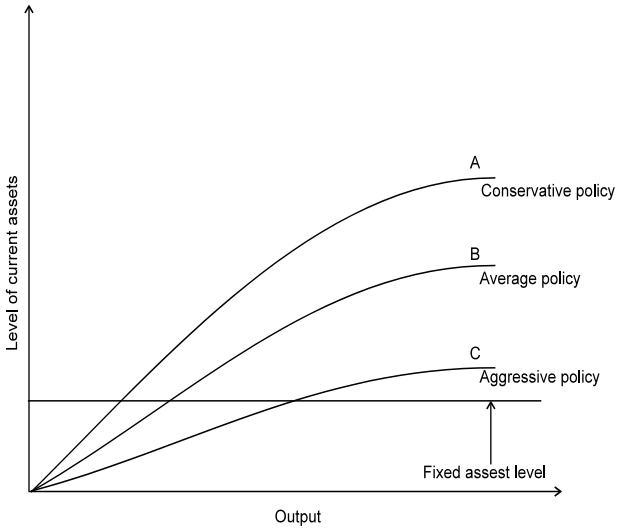
As the firm's output and sales increases, the need for current assets also increases. Generally, current assets do not increase in direct proportion to output, current assets may increase at a decreasing rate with output. As the output increases, the firm starts using its current asset more efficiently.

The level of the current assets can be measured by creating a relationship between current assets and fixed assets. Dividing current assets by fixed assets gives current assets/fixed assets ratio.

Assuming a constant level of fixed assets, a higher current assets/fixed assets ratio indicates a conservative current assets policy and a lower current assets/fixed assets ratio means an aggressive current assets policy assuming all factors to be constant.

A conservative policy implies greater liquidity and lower risk whereas an aggressive policy indicates higher risk and poor liquidity. Moderate current assets policy will fall in the middle of conservative and aggressive policies. The current assets policy of most of the firms may fall between these two extreme policies.

The following diagram shows alternative current assets policies:



7.4.2 Liquidity versus Profitability: Risk return trade off – A firm may follow a conservative, aggressive or moderate policy as discussed earlier. However, these policies involve risk-return trade off.

A conservative policy means lower return and risk. While an aggressive policy produces higher return and risk.

The two important aims of the working capital management are profitability and solvency.

A liquid firm has less risk of insolvency that is, it will hardly experience a cash shortage or a stock out situation. However, there is a cost associated with maintaining a sound liquidity position. However, to have higher profitability the firm may have to sacrifice solvency and maintain a relatively low level of current assets. This will improve firm's profitability as fewer funds will be tied up in idle current assets, but its solvency would be threatened and exposed to greater risk of cash shortage and stock-outs.

The following illustration explains the risk-return trade off of various working capital management policies, viz., conservative, aggressive and moderate.

Illustration 1 : *A firm has the following data for the year ending 31st March, 2014:*

	₹
Sales (1,00,000 @ ₹ 20/-)	*20,00,000*
Earning before Interest and Taxes	*2,00,000*
Fixed Assets	*5,00,000*

The three possible current assets holdings of the firm are ₹ 5,00,000/-, ₹ 4,00,000/- and ₹ 3,00,000. It is assumed that fixed assets level is constant and profits do not vary with current assets levels. The effect of the three alternative current assets policies is as follows:

Effect of Alternative Working Capital Policies

(*Amount in ₹)*

Working Capital Policy	Conservative	Moderate	Aggressive
Sales	20,00,000	20,00,000	20,00,000
Earnings before Interest and Taxes (EBIT)	2,00,000	2,00,000	2,00,000
Current Assets	5,00,000	4,00,000	3,00,000
Fixed Assets	5,00,000	5,00,000	5,00,000
Total Assets	10,00,000	9,00,000	8,00,000
Return on Total Assets (EBIT/Total Assets)	20%	22.22%	25%
Current Assets/Fixed Assets	1.00	0.80	0.60

The aforesaid calculations show that the conservative policy provides greater liquidity (solvency) to the firm, but lower return on total assets. On the other hand, the aggressive policy gives higher return, but low liquidity and thus is very risky. The moderate policy generates return higher than Conservative policy but lower than aggressive policy. This is less risky than aggressive policy but more risky than conservative policy.

In determining the optimum level of current assets, the firm should balance the profitability – solvency tangle by minimizing total costs – Cost of liquidity and cost of illiquidity.

7.5 Estimating Working Capital Needs

Operating cycle is one of the most reliable methods of Computation of Working Capital.

However, other methods like ratio of sales and ratio of fixed investment may also be used to determine the Working Capital requirements. These methods are briefly explained as follows:

(i) Current Assets Holding Period: To estimate working capital needs based on the average holding period of current assets and relating them to costs based on the company's experience in the previous year. This method is essentially based on the Operating Cycle Concept.

(ii) Ratio of Sales: To estimate working capital needs as a ratio of sales on the assumption that current assets change with changes in sales.

(iii) Ratio of Fixed Investments: To estimate Working Capital requirements as a percentage of fixed investments.

A number of factors will, however, be impacting the choice of method of estimating Working Capital. Factors such as seasonal fluctuations, accurate sales forecast, investment cost and variability in sales price would generally be considered. The production cycle and credit and

collection policies of the firm will have an impact on Working Capital requirements. Therefore, they should be given due weightage in projecting Working Capital requirements.

7.6 Operating or Working Capital Cycle

A useful tool for managing working capital is the operating cycle.

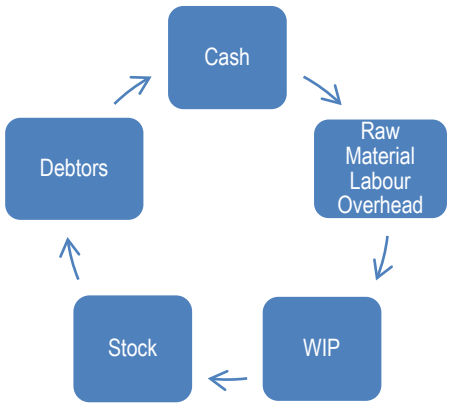
The operating cycle analyzes the accounts receivable, inventory and accounts payable cycles in terms of number of days. For example:

- Accounts receivables are analyzed by the average number of days it takes to collect an account.
- Inventory is analyzed by the average number of days it takes to turn over the sale of a product (from the point it comes in the store to the point it is converted to cash or an account receivable).
- Accounts payables are analyzed by the average number of days it takes to pay a supplier invoice.

Operating/Working Capital Cycle Definition

Working Capital cycle indicates the length of time between a company's paying for materials, entering into stock and receiving the cash from sales of finished goods. It can be determined by adding the number of days required for each stage in the cycle. For example, a company holds raw materials on an average for 60 days, it gets credit from the supplier for 15 days, production process needs 15 days, finished goods are held for 30 days and 30 days credit is extended to debtors. The total of all these, 120 days, i.e., 60 – 15 + 15 + 30 + 30 days is the total working capital cycle.

Working Capital Cycle



Most businesses cannot finance the operating cycle (accounts receivable days + inventory days) with accounts payable financing alone. Consequently, working capital financing is needed. This shortfall is typically covered by the net profits generated internally or by externally borrowed funds or by a combination of the two.

The faster a business expands the more cash it will need for working capital and investment. The cheapest and best sources of cash exist as working capital right within business. Good management of working capital will generate cash which will help improve profits and reduce risks. Bear in mind that the cost of providing credit to customers and holding stocks can represent a substantial proportion of a firm's total profits.

Each component of working capital (namely inventory, receivables and payables) has two dimensions ……TIME ……and MONEY, when it comes to managing working capital then time is money. If you can get money to move faster around the cycle (e.g. collect monies due from debtors more quickly) or reduce the amount of money tied up (e.g. reduce inventory levels relative to sales), the business will generate more cash or it will need to borrow less money to fund working capital. Similarly, if you can negotiate improved terms with suppliers e.g. get longer credit or an increased credit limit; you are effectively creating free finance to help fund future sales.

If you…….	Then …….
Collect receivables (debtors) faster	You release cash from the cycle
Collect receivables (debtors) slower	Your receivables soak up cash.
Get better credit (in terms of duration or amount) from suppliers.	You increase your cash resources.
Shift inventory (stocks) faster	You free up cash.
Move inventory (stocks) slower.	You consume more cash.

The determination of operating capital cycle helps in the forecast, control and management of working capital. The length of operating cycle is the indicator of performance of management. The net operating cycle represents the time interval for which the firm has to negotiate for Working Capital from its bankers. It enables to determine accurately the amount of working capital needed for the continuous operation of business activities.

The duration of working capital cycle may vary depending on the nature of the business.

In the form of an equation, the operating cycle process can be expressed as follows:

Operating Cycle = R + W + F + D – C

Where,

R = Raw material storage period

W = Work-in-progress holding period

F = Finished goods storage period

D = Debtors collection period.

C = Credit period availed.

The various components of operating cycle may be calculated as shown below:

(1) $$\text{Raw material storage period} = \frac{\text{Average stock of raw material}}{\text{Average cost of raw material consumption per day}}$$

(2) $$\text{Work-in-progress holding period} = \frac{\text{Average work-in-progress inventory}}{\text{Average cost of production per day}}$$

(3) $$\text{Finished goods storage period} = \frac{\text{Average stock of finished goods}}{\text{Average cost of goods sold per day}}$$

(4) $$\text{Debtors collection period} = \frac{\text{Average book debts}}{\text{Average Credit Sales per day}}$$

(5) $$\text{Credit period availed} = \frac{\text{Average trade creditors}}{\text{Average credit purchases per day}}$$

7.6.1 Working Capital Based on Operating Cycle: One of the methods for forecasting working capital requirement is based on the concept of operating cycle. The calculation of operating cycle and the formula for estimating working capital on its basis has been demonstrated with the help of following illustration:

Illustration 2 : *From the following information of XYZ Ltd., you are required to calculate :*

(a) Net operating cycle period.

(b) Number of operating cycles in a year.

		₹
(i)	*Raw material inventory consumed during the year*	*6,00,000*
(ii)	*Average stock of raw material*	*50,000*
(iii)	*Work-in-progress inventory*	*5,00,000*
(iv)	*Average work-in-progress inventory*	*30,000*
(v)	*Finished goods inventory*	*8,00,000*
(vi)	*Average finished goods stock held*	*40,000*
(vii)	*Average collection period from debtors*	*45 days*
(viii)	*Average credit period availed*	*30 days*
(ix)	*No. of days in a year*	*360 days*

Solution

Calculation of Net Operating Cycle period of XYZ Ltd.

	Days
Raw material storage period: (a)	30
$\left(\frac{\text{Average stock of raw material}}{\text{Average cost of raw material consumption per day}}\right)$	
(₹ 50,000 / 1667*)	
*(₹ 6,00,000 / 360 days)	
W.I.P. holding period : (b)	22
$\left(\frac{\text{Average work}-\text{in}-\text{progress inventory}}{\text{Average cost of production per day}}\right)$	
₹ 30,000 / 1,388)**	
**(₹ 5,00,000 / 360 days)	
Finished goods storage period : (c)	18
$\left(\frac{\text{Average stock of finished goods}}{\text{Average cost of goods sold per day}}\right)$	
(₹ 40,000 / 2,222)***	
***(₹ 8,00,000 / 360 days)	
Debtors collection period: (d)	45
Total operating cycle period:	115
[(a) + (b) + (c) + (d)]	
Less: Average credit period availed	30
(i) Net operating cycle period	85
(ii) Number of operating cycles in a year	4.2
	(360 days / 85 days)

7.6.2 Estimation of Amount of Different Components of Current Assets and Current Liabilities: The various constituents of current assets and current liabilities have a direct bearing on the computation of working capital and the operating cycle. The holding period of various constituents of Current Assets and Current Liabilities cycle may either contract or expand the net operating cycle period.

Shorter the operating cycle period, lower will be the requirement of working capital and *vice-versa.*

Estimation of Current Assets

The estimates of various components of working capital may be made as follows:

(i) *Raw Materials Inventory:* The funds to be invested in raw materials inventory may be estimated on the basis of production budget, the estimated cost per unit and average holding period of raw material inventory by using the following formula:

$$\left\{\frac{\text{Estimated production (in units)} \times \text{Estimated cost of raw material per unit}}{\text{12 months / 360 days}}\right\} \times \text{Average raw material holding period (in months / in days)}$$

Note: 360 days in a year are generally assumed to facilitate calculation.

(ii) *Work-in-Progress Inventory:* The funds to be invested in work-in-progress can be estimated by the following formula:

$$\left\{\frac{\text{Estimated production (in units)} \times \text{Estimated work-in-process cost per unit}}{\text{12 months / 360 days}}\right\} \times \text{Average holding period of W.I.P. (months / days)}$$

(iii) *Finished Goods:* The funds to be invested in finished goods inventory can be estimated with the help of following formula:

$$\left\{\frac{\text{Estimated production (in units)} \times \text{Cost of production (Per unit excluding depreciation}}{\text{12 months / 360 days}}\right\} \times \text{Average holding period of finished goods inventory (months / days)}$$

(iv) *Debtors*: Funds to be invested in trade debtors may be estimated with the help of following formula:

$$\left\{\frac{\text{Estimated credit sales (in units)} \times \text{Cost of sales (Per unit excluding depreciation}}{\text{12 months/360 days}}\right\} \times \text{Average debtors collection period (months/days)}$$

(v) Minimum desired Cash and Bank balances to be maintained by the firm has to be added in the current assets for the computation of working capital.

Estimation of Current Liabilities

Current liabilities generally affect computation of working capital. Hence, the amount of working capital is lowered to the extent of current liabilities (other than bank credit) arising in

the normal course of business. The important current liabilities like trade creditors, wages and overheads can be estimated as follows:

(i) *Trade Creditors:*

$$\left\{\frac{\text{Estimated yearly production (in units)} \times \text{Raw material requirements per unit}}{\text{12 months/360 days}}\right\} \times \text{Credit period granted by suppliers (months/days)}$$

(ii) *Direct Wages:*

$$\left\{\frac{\text{Estimated production (in units)} \times \text{Direct labour cost per unit}}{\text{12 months/360 days}}\right\} \text{x} \text{ Average time lag in payment of wages (months/days)}$$

(iii) *Overheads (other than depreciation and amortization):*

$$\left\{\frac{\text{Estimated yearly production (in units)} \times \text{Overhead cost per unit}}{\text{12 months / 360 days}}\right\} \times \text{Average time lag in payment of overheads (months / days)}$$

Note: The amount of overheads may be separately calculated for different types of overheads. In the case of selling overheads, the relevant item would be sales volume instead of production volume.

The following illustration shows the process of working capital estimation:

Illustration 3: *On 1st January, the Managing Director of Naureen Ltd. wishes to know the amount of working capital that will be required during the year. From the following information prepare the working capital requirements forecast. Production during the previous year was 60,000 units. It is planned that this level of activity would be maintained during the present year. The expected ratios of the cost to selling prices are Raw materials 60%, Direct wages 10% and Overheads 20%. Raw materials are expected to remain in store for an average of 2 months before issue to production. Each unit is expected to be in process for one month, the raw materials being fed into the pipeline immediately and the labour and overhead costs accruing evenly during the month. Finished goods will stay in the warehouse awaiting dispatch to customers for approximately 3 months. Credit allowed by creditors is 2 months from the date of delivery of raw material. Credit allowed to debtors is 3 months from the date of dispatch. Selling price is ₹ 5 per unit. There is a regular production and sales cycle. Wages and overheads are paid on the 1st of each month for the previous month. The company normally keeps cash in hand to the extent of ₹ 20,000.*

Solution

Working Notes:

1. Raw material inventory: The cost of materials for the whole year is 60% of the Sales value.

   Hence it is 60,000 units x ₹ 5 x $\frac{60}{100}$ = ₹ 1,80,000. The monthly consumption of raw material would be ₹ 15,000. Raw material requirements would be for two months; hence raw materials in stock would be ₹ 30,000.

2. Work-in-process: (Students may give special attention to this point). It is stated that each unit of production is expected to be in process for one month).

		₹
(a)	Raw materials in work-in-process (being one month's raw material requirements)	15,000
(b)	Labour costs in work-in-process (It is stated that it accrues evenly during the month. Thus, on the first day of each month it would be zero and on the last day of month the work-in-process would include one month's labour costs. On an average therefore, it would be equivalent to ½ of the month's labour costs)	1,250
(c)	Overheads (For ½ month as explained above) Total work-in-process	2,500 18,750

3. Finished goods inventory:

(3 month's cost of production)	45,000
Raw materials	7,500
Labour	15,000
Overheads	67,500

4. Creditors: Suppliers allow a two months' credit period. Hence, the average amount of creditors would be ₹ 30,000 being two months' purchase of raw materials.

5. Direct Wages payable: The direct wages for the whole year is 60,000 units × ₹ 5 x 10% = ₹ 30,000. The monthly direct wages would be ₹ 2,500 (₹ 30,000 ÷12). Hence, wages payable would be ₹ 2,500.

6. Overheads Payable: The overheads for the whole year is 60,000 units × ₹ 5 x 20% = ₹ 60,000. The monthly overheads will be ₹ 5,000 (₹ 60,000 ÷ 12). Hence overheads payable would be ₹ 5,000 p.m.

7. Debtors: The total cost of sales = 2,70,000.

   Therefore, debtors = 2,70,000 x $\frac{3}{12}$ = 67,500.

   Total Cost of Sales = RM + Wages + Overheads + Opening Finished goods inventory – Closing finished goods inventory.

   = 1,80,000 + 30,000 + 60,000 + 67,500 – 67,500 = 2,70,000.

   Here it has been assumed that inventory level is uniform throughout the year, therefore opening inventory equals closing inventory.

Statement of Working Capital Required:

	₹	₹
Current Assets		
Raw materials inventory (Refer to working note 1)	30,000	
Debtors (Refer to working note 2)	67,500	
Working–in-process (Refer to working note 3)	18,750	
Finished goods inventory (Refer to working note 4)	67,500	
Cash	20,000	2,03,750
Current Liabilities		
Creditors (Refer to working note 5)	30,000	
Direct wages payable (Refer to working note 6)	2,500	
Overheads payable (Refer to working note 7)	5,000	37,500
Estimated working capital requirements		1,66,250

7.6.3 Working Capital Requirement Estimation based on Cash Cost: We have already seen that working capital is the difference between current assets and current liabilities.

To estimate requirements of working capital, we have to forecast the amount required for each item of current assets and current liabilities.

In practice another approach may also be useful in estimating working capital requirements. This approach is based on the fact that in the case of current assets, like sundry debtors and finished goods, etc., the exact amount of funds blocked is less than the amount of such current assets. For example:

- If we have sundry debtors worth ₹ 1 lakh and our cost of production is ₹ 75,000, the actual amount of funds blocked in sundry debtors is ₹ 75,000 the cost of sundry debtors, the rest (₹ 25,000) is profit.
- Again some of the cost items also are non-cash costs; depreciation is a non-cash cost item. Suppose out of ₹ 75,000, ₹ 5,000 is depreciation; then it is obvious that the actual funds blocked in terms of sundry debtors totaling ₹ 1 lakh is only ₹ 70,000. In other words, ₹ 70,000 is the amount of funds required to finance sundry debtors worth ₹ 1 lakh.
- Similarly, in the case of finished goods which are valued at cost, non-cash costs may be excluded to work out the amount of funds blocked.

Many experts, therefore, calculate the working capital requirements by working out the cash costs of finished goods and sundry debtors. Under this approach, the debtors are calculated not as a percentage of sales value but as a percentage of cash costs. Similarly, finished goods are valued according to cash costs.

Illustration 4 : *The following annual figures relate to XYZ Co.,*

	₹
Sales (at two months' credit)	*36,00,000*
Materials consumed (suppliers extend two months' credit)	*9,00,000*
Wages paid (monthly in arrear)	*7,20,000*
Manufacturing expenses outstanding at the end of the year (Cash expenses are paid one month in arrear)	*80,000*
Total administrative expenses, paid as above	*2,40,000*
Sales promotion expenses, paid quarterly in advance	*1,20,000*

The company sells its products on gross profit of 25% accounting depreciation as part of the cost of production. It keeps one months' stock each of raw materials and finished goods, and a cash balance of ₹ 1,00,000.

Assuming a 20% safety margin, work out the working capital requirements of the company on cash cost basis. Ignore work-in-process.

Solution

Statement of Working Capital requirements (cash cost basis)

A. Current Asset	₹	₹	.
Materials	(₹ 9,00,000 ÷12)	75,000	
Finished Goods	(₹ 25,80,000 ÷12)	2,15,000	
Debtors	(₹ 29,40,000÷6)	4,90,000	
Cash		1,00,000	
Prepaid expenses (Sales promotion)	(₹ 1,20,000÷4)	30,000	9,10,000

B. Current Liabilities:			
Creditors for materials	(₹ 9,00,000÷6)	1,50,000	
Wages outstanding	(₹ 7,20,000÷ 12)	60,000	
Manufacturing expenses		80,000	
Administrative expenses	(₹ 2,40,000÷12)	20,000	3,10,000
Net working capital (A-B)			6,00,000
Add: Safety margin @ 20%			1,20,000
Total working capital requirements			7,20,000

Working Notes:

(i) Computation of Annual Cash Cost of Production	₹
Material consumed	9,00,000
Wages	7,20,000
Manufacturing expenses (₹ 80,000 x 12)	9,60,000
Total cash cost of production	25,80,000
(ii) Computation of Annual Cash Cost of Sales:	**₹**
Cash cost of production as in (i) above	25,80,000
Administrative Expenses	2,40,000
Sales promotion expenses	1,20,000
Total cash cost of sales	29,40,000

Illustration 5 *: PQ Ltd., a company newly commencing business in 2013 has the under-mentioned projected Profit and Loss Account:*

	₹	₹
Sales		*2,10,000*
Cost of goods sold		*1,53,000*
Gross Profit		*57,000*
Administrative Expenses	*14,000*	
Selling Expenses	*13,000*	*27,000*
Profit before tax		*30,000*
Provision for taxation		*10,000*
Profit after tax		*20,000*
The cost of goods sold has been arrived at as under:		
Materials used	*84,000*	
Wages and manufacturing Expenses	*62,500*	
Depreciation	*23,500*	
	1,70,000	

Less: Stock of Finished goods		
(10% of goods produced not yet sold)	*17,000*	
	1,53,000	

The figure given above relate only to finished goods and not to work-in-progress. Goods equal to 15% of the year's production (in terms of physical units) will be in process on the average requiring full materials but only 40% of the other expenses. The company believes in keeping materials equal to two months' consumption in stock.

All expenses will be paid one month in advance. Suppliers of materials will extend 1-1/2 months credit. Sales will be 20% for cash and the rest at two months' credit. 70% of the Income tax will be paid in advance in quarterly instalments. The company wishes to keep ₹ 8,000 in cash. 10% has to be added to the estimated figure for unforeseen contingencies.

Prepare an estimate of working capital.

Note: All workings should form part of the answer.

Solution

Statement showing the requirements of Working Capital

Particulars		*Rs.*
A. Current Assets:		
Stock of Raw material	96,600 x 2/12	16,100
Stock of Work-in-progress	As per Working Note	16,350
Stock of Finished goods	1,46,500 x 10/100	14,650
Debtors	1,27,080 x 2/12	21,180
Cash in Hand		8,000
Prepaid Expenses:		
Wages & Mfg. Expenses	66,250 x 1/12	5,521
Administrative expenses	14,000 x 1/12	1,167
Selling & Distribution Expenses	13,000 x 1/12	1,083
Total Current Assets		84,051
B. Current Liabilities:		
Creditors for Raw materials	1,12,700 x 1.5/12	14,088
Provision for Taxation (Net of Advance Tax)	10,000 x 30/100	3,000
Total Current Laibilities		17,088
C. Net Working Capital (A – B)		66,963

Working Notes:

(i) Calculation of Stock of Work-in-progress

Particulars	*Rs.*
Raw Material (84,000 x 15%)	12,600
Wages & Mfg. Expenses (62,500 x 15% x 40%)	3,750
	-
Total	16,350

(ii) Calculation of Stock of Finished Goods and Cost of Sales

Particulars	*Rs.*
Direct material Cost [₹ 84,000 + ₹ 12,600]	96,600
Wages & Mfg. Expenses [₹ 62,500 + ₹ 3,750]	66,250
Depreciation	0
Gross Factory Cost	1,62,850
Less: Closing W.I.P	(16,350)
Cost of goods produced	1,46,500
Less: Closing stock	(14,650)
Cost of goods sold	1,31,850
Add: Administrative Expenses	14,000
Add: Selling and Distribution Expenses	13,000
Total Cash Cost of Sales	1,58,850
Debtors (80% of cash cost of sales)	1,27,080

(iii) Calculation of Credit Purchase

Particulars	*Rs.*
Raw material consumed	96,600
Add: Closing Stock	16,100
Less: Opening Stock	-
Purchases	1,12,700

Illustration 6*: M.A. Limited is commencing a new project for manufacture of a plastic component. The following cost information has been ascertained for annual production of 12,000 units which is the full capacity:*

	Costs per unit (₹)
Materials	*40*

Direct labour and variable expenses	*20*
Fixed manufacturing expenses	*6*
Depreciation	*10*
Fixed administration expenses	*4*
	80

The selling price per unit is expected to be ₹ 96 and the selling expenses ₹ 5 per unit. 80% of which is variable.

In the first two years of operations, production and sales are expected to be as follows:

Year	*Production (No. of units)*	*Sales (No.of units)*
1	*6,000*	*5,000*
2.	*9,000*	*8,500*

To assess the working capital requirements, the following additional information is available:

(a)	*Stock of materials*	*2.25 months' average consumption*
(b)	*Work-in-process*	*Nil*
(c)	*Debtors*	*1 month's average sales.*
(d)	*Cash balance*	*₹ 10,000*
(e)	*Creditors for supply of materials*	*1 month's average purchase during the year.*
(f)	*Creditors for expenses*	*1 month's average of all expenses during the year.*

Prepare, for the two years:

(i) A projected statement of Profit/Loss (Ignoring taxation); and

(ii) A projected statement of working capital requirements.

Solution

(i)

M.A. Limited
Projected Statement of Profit / Loss
(Ignoring Taxation)

	Year 1	Year 2
Production (Units)	6,000	9,000
Sales (Units)	5,000	8,500

	₹	₹
Sales revenue @ ₹ 96 per unit: (A)	4,80,000	8,16,000
Cost of production:		
Materials @ ₹ 40 per unit	2,40,000	3,60,000
Direct labour and variable expenses @ ₹ 20 per unit	1,20,000	1,80,000
Fixed manufacturing expenses		
(Production Capacity: 12,000 units @ ₹ 6)	72,000	72,000
Depreciation		
(Production Capacity : 12,000 units @ ₹ 10)	1,20,000	1,20,000
Fixed administration expenses		
(Production Capacity : 12,000 units @ ₹ 4)	48,000	48,000
Total costs of production	6,00,000	7,80,000
Add: Opening stock of finished goods		1,00,000
(Year 1 : Nil; Year 2 : 1,000 units)		
Cost of goods available	6,00,000	8,80,000
(Year 1: 6,000 units; Year 2: 10,000 units)		
Less: Closing stock of finished goods at average cost (year 1: 1000 units, year 2 : 1500 units)	1,00,000	1,32,000
Cost of goods sold	5,00,000	7,48,000
Add: Selling expenses – Variable @ 4 per unit	20,000	34,000
Fixed (12,000 × Re.1)	12,000	12,000
Cost of Sales : (B)	5,32,000	7,94,000
Profit (+) / Loss (-): (A-B)	(-) 52,000	(+) 22,000

Working Notes:

1. Calculation of creditors for supply of materials:	*Year 1*	*Year 2*
	₹	₹
Materials consumed during the year	2,40,000	3,60,000
Add: Closing stock (2.25 month's average consumption)	45,000	67,500
	2,85,000	4,27,500
Less: Opening Stock		45,000
Purchases during the year	2,85,000	3,82,500
Average purchases per month (Creditors)	23,750	31,875

2. Creditors for expenses:	*Year 1* ₹	*Year 2* ₹
Total direct labour, manufacturing, administration and selling expenses for the year	2,72,000	3,46,000
Average per month	22,667	28,833

(ii) Projected statement of working capital requirements

	Year 1 ₹	*Year 2* ₹
Current Assets:		
Stock of materials (2.25 month's average consumption)	45,000	67,500
Finished goods	1,00,000	1,32,000
Debtors (1 month's average sales)	40,000	68,000
Cash	10,000	10,000
Total Current Assets (A)	1,95,000	2,77,500
Current Liabilities:		
Creditors for supply of materials	23,750	31,875
Refer to working note 1)		
Creditors for expenses	22,667	28,833
(Refer to working note 2)		
Total Current Liabilities: (B)	46,417	60,708
Estimated Working Capital Requirements: (A-B)	1,48,583	2,16,792

Projected Statement of Working Capital Requirement (Cash Cost Basis)

				Year 1	Year 2
(A)	Current Assets				
	(i) Stock of RM				
	(6000 units × ₹ 40 × 2.25/12)			45,000	67,500
	(9000 units × ₹ 40 × 2.25 /12)				
	(ii) Finished Goods :			80,000	1,11,000
	Cash Cost of Production	Year 1	Year 2		
	Materials @ ₹ 40 per unit	2,40,000	3,60,000		
	Labour & Variable Expenses @ ₹ 20 per unit	1,20,000	1,80,000		
	Total Fixed & Adm. Expenses (12,000 with @ ₹ 10)	1,20,000	1,20,000		

	Current Cost (Cash)	4,80,000	6,60,000		
	Add: Opening Stock at Average Cost $\left(\frac{₹\ 4,80,000 \times 1,000}{6,000}\right)$ for year 2	— 80,000	80,000		
	Less : Closing Stock at Avg. Cost $\left(\frac{₹\ 7,40,000 \times 1,500}{10,000}\right)$		1,11,000		
	Cost of Good Sold (Cash)	4,00,000	6,29,000		
	(iii) Debtors (4,32,000 × 1/12) (6,75,000 × 1/12)				
	Cost of Goods Sold (Cash	4,00,000	6,29,000	36,000	56,250
	Add : Variable Expenses @ ₹ 4)	20,000	34,000		
	Add : Total Fixed Selling expenses	12,000	12,000		
	(12,000 units x Re. 1)	4,32,000	6,75,000		
	(iv) Minimum Desired Cash			10,000	10,000
	Total Investment in Current Assets			1,71,000	2,44,750
(B)	Current Liabilities				
				Yr 1	Yr 2
	(i) Creditors for supply of Material	Year 1	Year 2		
	(2,85,000 x 1/12) (3,82,500 x 1/12)			23,750	31,875
	Material consumed	2,40,000	3,60,000		
	Add : Closing Stock				
	(3 months avg. consumption)	45,000	67,500		
	Less : Opening Stock	—	(45,000)		
	Purchases	2,85,000	3,82,500		
	Creditors for Expenses				
	(2,72,000 x 1/12; 3,46,000 x 1/12)			22,667	28,833
	Labour & Variable	1,20,000	1,80,000		
	Fixed Manuf. & Adm.	1,20,000	1,20,000		
	Selling (fixed & variable)	32,000	46,000		
	Total Expenses	2,72,000	3,46,000		
	Total Current Liabilities			46,417	60,708
	Net Working Capital			1,24,583	1,84,042

Illustration 7

Theta Limited
Balance Sheets as on

		₹
	31st March, 2013	*31st March, 2012*
Assets		
Cash	*3,49,600*	*4,83,600*
Trade investments	*1,60,000*	*4,20,000*
Debtors	*3,05,400*	*3,08,600*
Stock	*2,35,200*	*1,84,600*
Prepaid expenses	*7,600*	*9,200*
Investment in A Ltd.	*3,00,000*	–
Land	*14,400*	*14,400*
Buildings, net of depreciation	*24,07,200*	*7,13,600*
Machinery, net of depreciation	*4,43,400*	*4,28,200*
Total Assets	*42,22,800*	*25,62,200*
Liabilities		
Creditors	*1,15,200*	*1,08,400*
Bank overdraft	*30,000*	*25,000*
Accrued expenses	*17,400*	*18,400*
Income-tax payable	*1,93,000*	*1,67,400*
Current installment due on long-term loans	*40,000*	–
Long term loans	*1,60,000*	*2,00,000*
Debentures, net of discount	*9,60,000*	–
Share capital, ₹ 10 per value	*6,70,000*	*6,00,000*
Share premium	*13,40,000*	*9,50,000*
Reserves and Surplus	*6,97,200*	*4,93,000*
Total Liabilities	*42,22,800*	*25,62,200*

Theta Limited
Income Statement
for the year ended 31st March, 2013

	(₹)
Sales	*16,92,400*
Cost of goods sold and operating expenses including depreciation on	

buildings of ₹ 26,400 and depreciation on machinery of ₹ 45,600	*11,91,200*
Operating profit	*5,01,200*
Gain on sale of trade investments	*25,600*
Gain on sale of machinery	*7,400*
Profit before taxes	*5,34,200*
Income taxes	*2,09,400*
Net Profit	*3,24,800*

Additional information:

(i) Machinery with a net book value of ₹ 36,600 was sold during the year.

(ii) The shares of A Ltd. were acquired upon a payment of ₹ 1,20,000 in cash and the issuance of 3,000 shares of Theta Limited. The share of Theta Limited was selling for ₹ 60 a share at that time.

(iii) A new building was purchased at a cost of ₹ 17,20,000.

(iv) Debentures having a face value of ₹ 100 each were issued in January 2013, at 96.

(v) The cost of trade investments sold was ₹ 2,60,000.

(vi) The company issued 4,000 shares for ₹ 2,80,000.

(vii) Cash dividends of ₹ 1.80 a share were paid on 67,000 outstanding shares.

Prepare a statement of changes in financial position on working capital basis as well as cash basis of Theta Limited for the year ended 31st March, 2013.

Solution

Theta Limited
Statement of Changes in Financial Position (Working Capital Basis)
for the year ended 31st March, 2013

	₹
Sources	
Working capital from operations:	
Net income after tax	3,24,800
Add: Depreciation	72,000
	3,96,800
Less: Gain on sale of machinery	7,400
	3,89,400
Sale of machinery (₹ 36,600 + ₹ 7,400)	44,000

	Debentures issued	9,60,000
	Share capital issued for cash (including share premium)	2,80,000
	Financial transaction not affecting working capital	
	Shares issued in partial payment for investments in A Ltd.	1,80,000
	Financial Resources Provided	18,53,400
Uses		
	Purchase of buildings	17,20,000
	Purchase of machinery	97,400
	Instalment currently due on long-term loans	40,000
	Payment of cash dividends	1,20,600
	Purchase of investments in A Ltd. for cash	1,20,000
	Financial transaction not affecting working capital	
	Purchase of investments in A Ltd. in exchange of issue of 3,000 shares @ ₹ 60 each	1,80,000
Financial Resources Applied		22,78,000
	Net decrease in working capital	4,24,600

The amount of machinery sold is found out as follows:

Machinery

	₹		₹
Opening Balance (given)	4,28,200	Sale of machinery (given)	36,000
Purchases (plugs)	97,400	Depreciation (given)	45,600
		Closing balance (given)	4,43,400
	5,25,600		5,25,600

Theta Limited
Statement of Changes in Financial Position (Cash Basis)
for the year ended 31st March, 2013

			₹
Sources			
	Cash from operations:		
	Net income after tax	3,24,800	
	Add: Depreciation	72,000	
	Decrease in debtors	3,200	
	Decrease in prepaid expenses	1,600	

Increase in creditors	6,800	
Increase in income tax payable	25,600	4,34,000
Less: Gain on sale of machinery	7,400	
Increase in stock	50,600	
Decrease in accrued expenses	1,000	59,000
		3,75,000
Sale of trade investment		2,60,000
Increase in bank overdraft		5,000
Sale of machinery		44,000
Debentures issued		9,60,000
Shares issued		2,80,000
Financial transaction not affecting cash		
Share issued in partial payment for investment in A Ltd.		1,80,000
Instalment currently due on long-term loans		40,000
Financial Resources Provided		21,44,000
Uses		
Purchase of buildings		17,20,000
Purchase of machinery		97,400
Payment of cash dividend		1,20,600
Purchase of investments in A Ltd. for cash		1,20,000
Financial transaction not affecting cash		
Purchase of investments in A Ltd. in exchange of issue of 3,000 shares @ ₹ 60 each		1,80,000
Instalment currently due on long-term loans		40,000
		22,78,000
Net decrease in cash		1,34,000

Notes:

1. Funds from operations are shown net of taxes. Alternatively, payment of tax may be separately treated as use of funds. In that case, tax would be added to net profit.
2. If tax shown in Profit and Loss Account is assumed to be a provision, then the amount of cash paid for tax has to be calculated. In the present problem if this procedure is followed, then cash paid for tax is: ₹ 1,67,400 + ₹ 2,09,400 – ₹ 1,93,000 = ₹ 1,83,800.

Illustration 8: *Aneja Limited, a newly formed company, has applied to the commercial bank for the first time for financing its working capital requirements. The following information is available about the projections for the current year:*

Estimated level of activity: 1,04,000 completed units of production plus 4,000 units of work-in-progress. Based on the above activity, estimated cost per unit is:

Raw material	*₹ 80 per unit*
Direct wages	*₹ 30 per unit*
Overheads (exclusive of depreciation)	*₹ 60 per unit*
Total cost	*₹ 170 per unit*
Selling price	*₹ 200 per unit*

Raw materials in stock: Average 4 weeks consumption, work-in-progress (assume 50% completion stage in respect of conversion cost) (materials issued at the start of the processing).

Finished goods in stock	*8,000 units*
Credit allowed by suppliers	*Average 4 weeks*
Credit allowed to debtors/receivables	*Average 8 weeks*
Lag in payment of wages	*Average 1 $\frac{1}{2}$ weeks*

Cash at banks (for smooth operation) is expected to be ₹ 25,000.

Assume that production is carried on evenly throughout the year (52 weeks) and wages and overheads accrue similarly. All sales are on credit basis only.

You are required to calculate the net working capital required.

Solution

Estimate of the Requirement of Working Capital

		₹	₹
A.	*Current Assets:*		
	Raw material stock	6,64,615	
	(Refer to Working note 3)		
	Work in progress stock	5,00,000	
	(Refer to Working note 2)		
	Finished goods stock	13,60,000	
	(Refer to Working note 4)		
	Debtors	29,53,846	
	(Refer to Working note 5)		
	Cash and Bank balance	25,000	55,03,461
B.	*Current Liabilities:*		
	Creditors for raw materials	7,15,740	

(Refer to Working note 6)		
Creditors for wages	91,731	8,07,471
(Refer to Working note 7)		
Net Working Capital (A-B)		46,95,990

Working Notes:

1. *Annual cost of production*

	₹
Raw material requirements (1,04,000 units × ₹ 80)+ 3,20,000	86,40,000
Direct wages (1,04,000 units × ₹ 30) + 60,000	31,80,000
Overheads (exclusive of depreciation) (1,04,000 × ₹ 60)+ 1,20,000	63,60,000
Gross Factory Cost	1,81,80,000
Less: Closing W.I.P.	(5,00,000)
Cost of Goods Produced	1,76,80,000
Less: Closing Stock of Finished Goods (1,76,80,000 x 8,000/1,04,000)	(13,60,000)
Total Cash Cost of Sales	1,63,20,000

2. *Work in progress stock*

	₹
Raw material requirements (4,000 units × ₹ 80)	3,20,000
Direct wages (50% × 4,000 units × ₹ 30)	60,000
Overheads (50% × 4,000 units × ₹ 60)	1,20,000
	5,00,000

3. *Raw material stock*

It is given that raw material in stock is average 4 weeks consumption. Since, the company is newly formed, the raw material requirement for production and work in progress will be issued and consumed during the year.

Hence, the raw material consumption for the year (52 weeks) is as follows:

	₹
For Finished goods	83,20,000
For Work in progress	3,20,000
	86,40,000

Raw material stock $\frac{₹\ 86,40,000}{52\ \text{weeks}} \times 4\ \text{weeks}$ i.e. ₹ 6,64,615

4. *Finished goods stock*

8,000 units @ ₹ 170 per unit = ₹ 13,60,000

5. *Debtors for sale*

$$1,63,20,000 \times \frac{8}{52} = ₹\ 25,10,769$$

6. *Creditors for raw material*

Credit allowed by suppliers	Average 4 weeks
Purchases during the year (52 weeks) i.e. (₹ 83,20,000 + ₹ 3,20,000 + ₹ 6,64,615) *(Refer to Working notes 1,2 and 3 above)*	₹ 93,04,615
Creditors	$\frac{₹\ 93,04,615}{52 \text{ weeks}} \times 4$ weeks i.e ₹ 7,15,740

7. *Creditors for wages*

Lag in payment of wages	Average $1\frac{1}{2}$ weeks
Direct wages for the year (52 weeks) i.e. (₹ 31,20,000 + ₹ 60,000) (R*efer to Working notes 1 and 2 above)*	₹ 31,80,000
Creditors	$\frac{₹\ 31,80,000}{52 \text{ weeks}} \times 1\frac{1}{2}$ weeks i.e. ₹ 91,731

7.6.4 Effect of Double Shift Working on Working Capital Requirements: The greatest economy in introducing double shift is the greater use of fixed assets. Though production increases but little or very marginal funds may be required for additional assets.

But increase in the number of hours of production has an effect on the working capital requirements. Let's see the impact of double shift on some of the components of working capital:-

- It is obvious that in double shift working, an increase in stocks will be required as the production rises. However, it is quite possible that the increase may not be proportionate to the rise in production since the minimum level of stocks may not be very much higher. Thus, it is quite likely that the level of stocks may not be required to be doubled as the production goes up two-fold.
- The amount of materials in process will not change due to double shift working since work started in the first shift will be completed in the second; hence, capital tied up in materials in process will be the same as with single shift working. As such the cost of work-in-process will not change unless the second shift's workers are paid at a higher rate.

However, in examinations the students may increase the amount of stocks of raw materials proportionately unless instructions are to the contrary.

Illustration 9: *Samreen Enterprises has been operating its manufacturing facilities till 31.3.2013 on a single shift working with the following cost structure:*

	Per Unit ₹
Cost of Materials	*6.00*
Wages (out of which 40% fixed)	*5.00*
Overheads (out of which 80% fixed)	*5.00*
Profit	*2.00*
Selling Price	*18.00*
Sales during 2012-13 – ₹ 4,32,000. As at 31.3.2013 the company held:	
	₹
Stock of raw materials (at cost)	*36,000*
Work-in-progress (valued at prime cost)	*22,000*
Finished goods (valued at total cost)	*72,000*
Sundry debtors	*1,08,000*

In view of increased market demand, it is proposed to double production by working an extra shift. It is expected that a 10% discount will be available from suppliers of raw materials in view of increased volume of business. Selling price will remain the same. The credit period allowed to customers will remain unaltered. Credit availed of from suppliers will continue to remain at the present level i.e., 2 months. Lag in payment of wages and expenses will continue to remain half a month.

You are required to assess the additional working capital requirements, if the policy to increase output is implemented.

Solution

Statement of cost at single shift and double shift working

	24,000 units		48,000 Units	
	Per Unit	*Total*	*Per unit*	*Total*
	₹	₹	₹	₹
Raw materials	6	1,44,000	5.40	2,59,200
Wages - Variable	3	72,000	3.00	1,44,000
Fixed	2	48,000	1.00	48,000
Overheads - Variable	1	24,000	1.00	48,000
Fixed	4	96,000	2.00	96,000
Total cost	16	3,84,000	12.40	5,95,200

Profit	2	48,000	5.60	2,68,800
	18	4,32,000	18.00	8,64,000

$$\text{Sales in units 2012-13} = \frac{\text{Sales}}{\text{Unit selling price}} = \frac{₹\ 4,32,000}{₹\ 18} = 24,000 \text{ units}$$

$$\text{Stock of Raw Materials in units on 31.3.2013} = \frac{\text{Value of stock}}{\text{Cost per unit}} = \frac{₹\ 36,000}{6} = 6,000 \text{ units}$$

Stock of work-in-progress in units on 31.3.2013

$$= \frac{\text{Value of work-in-progress}}{\text{Cost per unit}} = \frac{₹\ 22,000}{(₹\ 6 + ₹\ 5)} = 2,000 \text{ units}$$

$$\text{Stock of finished goods in units 2012-13} = \frac{\text{Value of stock}}{\text{Cost per unit}} = \frac{₹\ 72,000}{₹\ 16} = 4,500 \text{ units.}$$

Comparative Statement of Working Capital Requirement

	Single Shift			Double Shift		
	Unit	*Rate* ₹	*Amount* ₹	*Unit*	*Rate* ₹	*Amount* ₹
Current Assets						
Inventories -						
Raw Materials	6000	6	36,000	12000	5.40	64,800
Work-in-Progress	2000	11	22,000	2000	9.40	18,800
Finished Goods	4500	16	72,000	9000	12.40	1,11,600
Sundry Debtors	6000	16	96,000	12000	12.40	1,48,800
Total Current Assets: (A)			2,26,000			3,44,000
Current Liabilities						
Creditors for Materials	4000	6	24,000	8000	5.40	43,200
Creditors for Wages	1000	5	5,000	2000	4.00	8,000
Creditors for Expenses	1000	5	5,000	2000	3.00	6,000
Total Current Liabilities: (B)			34,000			57,200
Working Capital: (A) – (B)			1,92,000			2,86,800

Increase in Working Capital requirement is (₹ 2,86,800 – ₹ 1,92,000) or ₹ 94,800

Notes:

(i) The quantity of material in process will not change due to double shift working since work started in the first shift will be completed in the second shift.

(ii) The valuation of work-in-progress based on prime cost as per the policy of the company is as under.

	Single shift ₹	*Double shift* ₹
Materials	6.00	5.40
Wages – Variable	3.00	3.00
Fixed	2.00	1.00
	11.00	9.40

7.7 Treasury Management: Meaning

In the wake of the competitive business environment resulting from the liberalization of the economy, there is a pressure to manage cash scientifically. The demand for funds for expansions coupled with high interest rates, foreign exchange volatility and the growing volume of financial transactions have necessitated efficient management of money.

Treasury management is defined as 'the corporate handling of all financial matters, the generation of external and internal funds for business, the management of currencies and cash flows and the complex, strategies, policies and procedures of corporate finance.'

The treasury management mainly deals with:-

- Working capital management; and
- Financial risk management (It includes forex and interest rate management).

The key goals of treasury management are:-

- Maximize the return on the available cash;
- Minimize interest cost on borrowings;
- Mobilise as much cash as possible for corporate ventures (in case of need); and
- Effective dealing in forex, money and commodity markets to reduce risks arising because of fluctuating exchange rates, interest rates and prices which can affect the profitability of the organization.

7.8 Functions of Treasury Department

1. Cash Management: It involves efficient cash collection process and managing payment of cash both inside the organisation and to third parties.

   There may be complete centralization within a group treasury or the treasury may simply advise subsidiaries and divisions on policy matter viz., collection/payment periods, discounts, etc.

   Treasury will also manage surplus funds in an investment portfolio. Investment policy will consider future needs for liquid funds and acceptable levels of risk as determined by company policy.

2. Currency Management: The treasury department manages the foreign currency risk exposure of the company. In a large multinational company (MNC) the first step will usually be to set off intra-group indebtedness. The use of matching receipts and payments in the same currency will save transaction costs. Treasury might advise on the currency to be used when invoicing overseas sales.

The treasury will manage any net exchange exposures in accordance with company policy. If risks are to be minimized then forward contracts can be used either to buy or sell currency forward.

3. Funding Management: Treasury department is responsible for planning and sourcing the company's short, medium and long-term cash needs. Treasury department will also participate in the decision on capital structure and forecast future interest and foreign currency rates.
4. Banking: It is important that a company maintains a good relationship with its bankers. Treasury department carry out negotiations with bankers and act as the initial point of contact with them. Short-term finance can come in the form of bank loans or through the sale of commercial paper in the money market.
5. Corporate Finance: Treasury department is involved with both acquisition and divestment activities within the group. In addition it will often have responsibility for investor relations. The latter activity has assumed increased importance in markets where share-price performance is regarded as crucial and may affect the company's ability to undertake acquisition activity or, if the price falls drastically, render it vulnerable to a hostile bid.

7.9 Management of Cash

Management of cash is an important function of the finance manager. It is concerned with the managing of:-

(i) Cash flows into and out of the firm;

(ii) Cash flows within the firm; and

(iii) Cash balances held by the firm at a point of time by financing deficit or investing surplus cash.

The main objectives of cash management for a business are:-

- Provide adequate cash to each of its units;
- No funds are blocked in idle cash; and
- The surplus cash (if any) should be invested in order to maximize returns for the business.

A cash management scheme therefore, is a delicate balance between the twin objectives of liquidity and costs.

7.9.1 The Need for Cash: The following are three basic considerations in determining the amount of cash or liquidity as have been outlined by Lord Keynes:

- *Transaction need:* Cash facilitates the meeting of the day-to-day expenses and other debt payments. Normally, inflows of cash from operations should be sufficient for this purpose. But sometimes this inflow may be temporarily blocked. In such cases, it is only the reserve cash balance that can enable the firm to make its payments in time.

- *Speculative needs:* Cash may be held in order to take advantage of profitable opportunities that may present themselves and which may be lost for want of ready cash/settlement.
- *Precautionary needs:* Cash may be held to act as for providing safety against unexpected events. Safety as is explained by the saying that a man has only three friends an old wife, an old dog and money at bank.

7.9.2 Cash Planning: Cash Planning is a technique to plan and control the use of cash. This protects the financial conditions of the firm by developing a projected cash statement from a forecast of expected cash inflows and outflows for a given period. This may be done periodically either on daily, weekly or monthly basis. The period and frequency of cash planning generally depends upon the size of the firm and philosophy of management. As firms grows and business operations become complex, cash planning becomes inevitable for continuing success.

The very first step in this direction is to estimate the requirement of cash. For this purpose cash flow statements and cash budget are required to be prepared. The technique of preparing cash flow and funds flow statements have already been discussed in this book. The preparation of cash budget has however, been demonstrated here.

7.9.3 Cash Budget: Cash Budget is the most significant device to plan for and control cash receipts and payments. This represents cash requirements of business during the budget period.

The various purposes of cash budgets are:-

- Coordinate the timings of cash needs. It identifies the period(s) when there might either be a shortage of cash or an abnormally large cash requirement;
- It also helps to pinpoint period(s) when there is likely to be excess cash;
- It enables firm which has sufficient cash to take advantage like cash discounts on its accounts payable; and
- Lastly it helps to plan/arrange adequately needed funds (avoiding excess/shortage of cash) on favorable terms.

On the basis of cash budget, the firm can decide to invest surplus cash in marketable securities and earn profits.

Main Components of Cash Budget

Preparation of cash budget involves the following steps:-

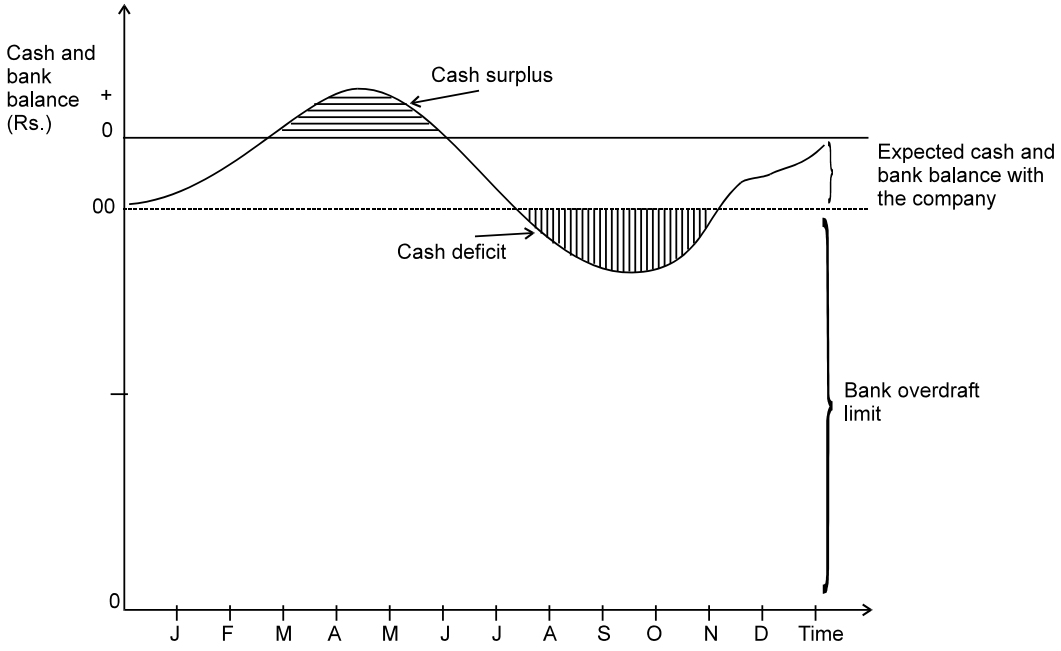
(a) Selection of the period of time to be covered by the budget. It is also defining the planning horizon.

(b) Selection of factors that have a bearing on cash flows. The factors that generate cash flows are generally divided into following two categories:-

i. Operating (cash flows generated by operations of the firm); and

ii. Financial (cash flows generated by financial activities of the firm).

The following figure highlights the cash surplus and cash shortage position over the period of cash budget for preplanning to take corrective and necessary steps.



7.10 Methods of Cash Flow Budgeting

A cash budget can be prepared in the following ways:

1. Receipts and Payments Method: In this method all the expected receipts and payments for budget period are considered. All the cash inflow and outflow of all functional budgets including capital expenditure budgets are considered. Accruals and adjustments in accounts will not affect the cash flow budget. Anticipated cash inflow is added to the opening balance of cash and all cash payments are deducted from this to arrive at the closing balance of cash. This method is commonly used in business organizations.

2. Adjusted Income Method: In this method the annual cash flows are calculated by adjusting the sales revenues and cost figures for delays in receipts and payments (change in debtors and creditors) and eliminating non-cash items such as depreciation.

3. Adjusted Balance Sheet Method: In this method, the budgeted balance sheet is predicted by expressing each type of asset and short-term liabilities as percentage of the expected sales. The profit is also calculated as a percentage of sales, so that the

increase in owner's equity can be forecasted. Known adjustments, may be made to long-term liabilities and the balance sheet will then show if additional finance is needed.

It is important to note that the capital budget will also be considered in the preparation of cash flow budget because the annual budget may disclose a need for new capital investments and also, the costs and revenues of any new projects coming on stream will need to be incorporated in the short-term budgets.

The Cash Budget can be prepared for short period or for long period.

7.10.1 Cash budget for short period: Preparation of cash budget month by month would require the following estimates:

(a) *As regards receipts*:

1. Receipts from debtors;
2. Cash Sales; and
3. Any other source of receipts of cash (say, dividend from a subsidiary company)

(b) *As regards payments:*

1. Payments to be made for purchases;
2. Payments to be made for expenses;
3. Payments that are made periodically but not every month;
   (i) Debenture interest;
   (ii) Income tax paid in advance;
   (iii) Sales tax etc.
4. Special payments to be made in a particular month, for example, dividends to shareholders, redemption of debentures, repayments of loan, payment of assets acquired, etc.

Format of Cash Budget

Co. Ltd.
Cash Budget
Period……..

	Month 1	Month 2	Month 3	Month 12
Receipts:				
1. Opening balance				
2. Collection from debtors				
3. Cash sales				

4. Loans from banks
5. Share capital
6. Miscellaneous receipts
7. Other items

Total

Payments:

1. Payments to creditors
2. Wages
3. Overheads
   (a)
   (b)
   (c)
4. Interest
5. Dividend
6. Corporate tax
7. Capital expenditure
8. Other items

Total

Closing balance

[Surplus (+)/Shortfall (-)]

Students are required to do good practice in preparing the cash budgets. The following illustration will show how short term cash budgets can be prepared.

Illustration 10 *: Prepare monthly cash budget for six months beginning from April 2014 on the basis of the following information:-*

(i) Estimated monthly sales are as follows:-

	₹		₹
January	*1,00,000*	*June*	*80,000*
February	*1,20,000*	*July*	*1,00,000*
March	*1,40,000*	*August*	*80,000*
April	*80,000*	*September*	*60,000*
May	*60,000*	*October*	*1,00,000*

(ii) Wages and salaries are estimated to be payable as follows:-

	₹		₹
April	*9,000*	*July*	*10,000*
May	*8,000*	*August*	*9,000*
June	*10,000*	*September*	*9,000*

(iii) Of the sales, 80% is on credit and 20% for cash. 75% of the credit sales are collected within one month and the balance in two months. There are no bad debt losses.

(iv) Purchases amount to 80% of sales and are made and paid for in the month preceding the sales.

(v) The firm has 10% debentures of ₹ 1,20,000. Interest on these has to be paid quarterly in January, April and so on.

(vi) The firm is to make an advance payment of tax of ₹ 5,000 in July, 2014.

(vii) The firm had a cash balance of ₹ 20,000 on April 1, 2014, which is the minimum desired level of cash balance. Any cash surplus/deficit above/below this level is made up by temporary investments/liquidation of temporary investments or temporary borrowings at the end of each month (interest on these to be ignored).

Solution

Workings:

Collection from debtors:

(Amount in ₹)

	February	March	April	May	June	July	August	September
Total sales	1,20,000	1,40,000	80,000	60,000	80,000	1,00,000	80,000	60,000
Credit sales (80% of total sales)	96,000	1,12,000	64,000	48,000	64,000	80,000	64,000	48,000
Collections:								
One month		72,000	84,000	48,000	36,000	48,000	60,000	48,000
Two months			24,000	28,000	16,000	12,000	16,000	20,000
Total collections			1,08,000	76,000	52,000	60,000	76,000	68,000

Monthly Cash Budget for Six months, April to September, 2014

(Amount in ₹)

Receipts:	*April*	*May*	*June*	*July*	*August*	*September*
Opening balance	20,000	20,000	20,000	20,000	20,000	20,000
Cash sales	16,000	12,000	16,000	20,000	16,000	12,000

Collection from debtors	1,08,000	76,000	52,000	60,000	76,000	68,000
Total cash available (A)	1,44,000	1,08,000	88,000	1,00,000	1,12,000	1,00,000
Payments:						
Purchases	48,000	64,000	80,000	64,000	48,000	80,000
Wages & salaries	9,000	8,000	10,000	10,000	9,000	9,000
Interest on debentures	3,000	---	----	3,000	---	----
Tax payment	---	---	----	5,000	----	----
Total payments (B)	60,000	72,000	90,000	82,000	57,000	89,000
Minimum cash balance desired	20,000	20,000	20,000	20,000	20,000	20,000
Total cash needed (C)	80,000	92,000	1,10,000	1,02,000	77,000	1,09,000
Surplus - deficit (A-C)	64,000	16,000	(22,000)	(2,000)	35,000	(9,000)
Investment/financing						
Temporary Investments	(64,000)	(16,000)	----		(35,000)	-----
Liquidation of temporary investments or temporary borrowings	----	----	22,000	2,000	----	9,000
Total effect of investment/financing (D)	(64,000)	(16,000)	22,000	2,000	(35,000)	9,000
Closing cash balance (A+D-B)	20,000	20,000	20,000	20,000	20,000	20,000

Illustration 11 : *From the following information relating to a departmental store, you are required to prepare for the three months ending 31st March, 2014:-*

(a) Month-wise cash budget on receipts and payments basis; and

(b) Statement of Sources and uses of funds for the three months period.

It is anticipated that the working capital at 1st January, 2014 will be as follows:-

	₹ in '000's
Cash in hand and at bank	*545*
Short term investments	*300*
Debtors	*2,570*
Stock	*1,300*
Trade creditors	*2,110*
Other creditors	*200*

Dividends payable			*485*
Tax due			*320*
Plant			*800*
Budgeted Profit Statement:			*₹ in '000's*
	January	*February*	*March*
Sales	*2,100*	*1,800*	*1,700*
Cost of sales	*1,635*	*1,405*	*1,330*
Gross Profit	*465*	*395*	*370*
Administrative, Selling and Distribution Expenses	*315*	*270*	*255*
Net Profit before tax	*150*	*125*	*115*
Budgeted balances at the end of each months:	*₹ in '000's*		
	31st Jan.	*28th Feb.*	*31st March*
Short term investments	*700*	*---*	*200*
Debtors	*2,600*	*2,500*	*2,350*
Stock	*1,200*	*1,100*	*1,000*
Trade creditors	*2,000*	*1,950*	*1,900*
Other creditors	*200*	*200*	*200*
Dividends payable	*485*	*--*	*--*
Tax due	*320*	*320*	*320*
Plant (depreciation ignored)	*800*	*1,600*	*1,550*

Depreciation amount to ₹ 60,000 is included in the budgeted expenditure for each month.

Solution

Workings:		*₹ in '000'*		
(1)	*Payments to creditors:*	Jan. 2014	*Feb.2014*	*March, 2014*
	Cost of Sales	1,635	1,405	1,330
	Add Closing Stocks	1,200	1,100	1,000
		2,835	2,505	2,330
	Less: Opening Stocks	1,300	1,200	1,100
	Purchases	1,535	1,305	1,230
	Add: Trade Creditors, Opening balance	2,110	2,000	1,950
		3,645	3,305	3,180

	Less: Trade Creditors, closing balance	2,000	1,950	1,900
	Payment	1,645	1,355	1,280
(2)	*Receipts from debtors:*			
	Debtors, Opening balances	2,570	2,600	2,500
	Add: Sales	2,100	1,800	1,700
		4,670	4,400	4,200
	Less: Debtors, closing balance	2,600	2,500	2,350
	Receipt	2,070	1,900	1,850

CASH BUDGET

(a) 3 months ending 31st March, 2014

			(₹, in 000's)
	January, 2014	*Feb. 2014*	*March, 2014*
Opening cash balances	545	315	65
Add: Receipts:			
From Debtors	2,070	1,900	1,850
Sale of Investments	---	700	----
Sale of Plant	---	---	50
Total (A)	2,615	2,915	1,965
Deduct: Payments			
Creditors	1,645	1,355	1,280
Expenses	255	210	195
Capital Expenditure	---	800	---
Payment of dividend	---	485	---
Purchase of investments	400	---	200
Total payments (B)	2,300	2,850	1,675
Closing cash balance (A - B)	315	65	290

(b) Statement of Sources and uses of Funds for the Three Month Period Ending 31st March, 2014

Sources:	*₹ '000*	*₹ '000*
Funds from operation:		
Net profit	390	

Add: Depreciation	180	570
Sale of plant		50
		620
Decrease in Working Capital		665
Total		1,285
Uses:		
Purchase of plant		800
Payment by dividends		485
Total		1,285

Statement of Changes in Working Capital

	January,14 *₹ 000*	*March, 14* *₹ 000*	*Increase* *₹ 000*	*Decrease* *₹ 000*
Current Assets				
Cash in hand and at Bank	545	290		255
Short term Investments	300	200		100
Debtors	2,570	2,350		220
Stock	1,300	1,000		300
	4,715	3,840		
Current Liabilities				
Trade Creditors	2,110	1,900	210	---
Other Creditors	200	200	---	---
Tax Due	320	320	---	---
	2,630	2,420		
Working Capital	2,085	1,420		
Decrease		665	665	
	2,085	2,085	875	875

Illustration 12 : *The following information relates to Zeta Limited, a publishing company:*

The selling price of a book is ₹ 15, and sales are made on credit through a book club and invoiced on the last day of the month.

Variable costs of production per book are materials (₹ 5), labour (₹ 4), and overhead (₹ 2)

The sales manager has forecasted the following volumes:

	Nov	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*
No. of Books	*1,000*	*1,000*	*1,000*	*1,250*	*1,500*	*2,000*	*1,900*	*2,200*	*2,200*	*2,300*

Customers are expected to pay as follows:

One month after the sale	*40%*
Two months after the sale	*60%*

The company produces the books two months before they are sold and the creditors for materials are paid two months after production.

Variable overheads are paid in the month following production and are expected to increase by 25% in April; 75% of wages are paid in the month of production and 25% in the following month. A wage increase of 12.5% will take place on 1st March.

The company is going through a restructuring and will sell one of its freehold properties in May for ₹ 25,000, but it is also planning to buy a new printing press in May for ₹ 10,000. Depreciation is currently ₹ 1,000 per month, and will rise to ₹ 1,500 after the purchase of the new machine.

The company's corporation tax (of ₹ 10,000) is due for payment in March.

The company presently has a cash balance at bank on 31 December 2013, of ₹ 1,500.

You are required to prepare a cash budget for the six months from January to June.

Solution

Workings:

1. Sale receipts

Month	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*
Forecast sales (S)	1,000	1,000	1,000	1,250	1,500	2,000	1,900	2,200
	₹	₹	₹	₹	₹	₹	₹	₹
S×15	15,000	15,000	15,000	18,750	22,500	30,000	28,500	33,000
Debtors pay:								
1 month 40%		6,000	6,000	6,000	7,500	9,000	12,000	11,400
2 month 60%		-	9,000	9,000	9,000	11,250	13,500	18,000
	-	-	15,000	1	1	2	2	2

2. Payment for materials – books produced two months before sale

Month	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*
Qty produced (Q)	1,000	1,250	1,500	2,000	1,900	2,200	2,200	2,300
	₹	₹	₹	₹	₹	₹	₹	₹
Materials (Q×5)	5,000	6,250	7,500	10,000	9,500	11,000	11,000	11,500
Paid (2 months after)	-	-	5,000	6,250	7,500	10,000	9,500	11,000

3. Variable overheads

Month	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*
Qty produced (Q)	1,000	1,250	1,500	2,000	1,900	2,200	2,200	2,300
	₹	₹	₹	₹	₹	₹	₹	₹
Var. overhead (Q×2)	2,000	2,500	3,000	4,000	3,800			
Var. overhead (Q×2.50)						5,500	5,500	5,750
Paid one month later		2,000	2,500	3,000	4,000	3,800	5,500	5,500

4. Wages payments

Month	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*
Qty produced (Q)	1,250	1,500	2,000	1,900	2,200	2,200	2,300
	₹	₹	₹	₹	₹	₹	₹
Wages (Q × 4)	5,000	6,000	8,000				
Wages (Q × 4.50)				8,550	9,900	9,900	10,350
75% this month	3,750	4,500	6,000	6,412	7,425	7,425	7,762
25% this month		1,250	1,500	2,000	2,137	2,475	2,475
		5,750	7,500	8,412	9,562	9,900	10,237

Cash budget – six months ended June

	Jan ₹	*Feb* ₹	*Mar* ₹	*Apr* ₹	*May* ₹	*Jun* ₹
Receipts:						
Credit sales	15,000	15,000	16,500	20,250	25,500	29,400
Premises disposal	-	-	-	-	25,000	-
	15,000	15,000	16,500	20,250	50,500	29,400
Payments:						
Materials	5,000	6,250	7,500	10,000	9,500	11,000

Var. overheads	2,500	3,000	4,000	3,800	5,500	5,500
Wages	5,750	7,500	8,412	9,562	9,900	10,237
Fixed assets	-	-	-	-	10,000	-
Corporation tax	-	-	10,000	-	-	-
	13,250	16,750	29,912	23,362	34,900	26,737
Net cash flow	1,750	(1,750)	(13,412)	(3,112)	15,600	2,663
Balance b/f	1,500	3,250	1,500	(11,912)	(15,024)	576
Cumulative cash flow	3,250	1,500	(11,912)	(15,024)	576	3,239

7.10.2Cash Budget for long period: Long-range cash forecast often resemble the projected sources and application of funds statement. The following procedure may be adopted to prepare long-range cash forecasts:

(i) Take the cash at bank and in the beginning of the year:

(ii) *Add:*

(a) Trading profit (before tax) expected to be earned;

(b) Depreciation and other development expenses incurred to be written off;

(c) Sale proceeds of assets';

(d) Proceeds of fresh issue of shares or debentures; and

(e) Reduction in working capital that is current assets (except cash) less current liabilities.

(iii) Deduct:

(a) Dividends to be paid.

(b) Cost of assets to be purchased.

(c) Taxes to be paid.

(d) Debentures or shares to be redeemed.

(e) Increase in working capital.

Illustration 13 : *You are given below the Profit & Loss Accounts for two years for a company:*

Profit and Loss Account

	Year 1	*Year 2*		*Year 1*	*Year 2*
	₹	*₹*		*₹*	*₹*
To Opening stock	*80,00,000*	*1,00,00,000*	*By Sales*	*8,00,00,000*	*10,00,00,000*
To Raw materials	*3,00,00,000*	*4,00,00,000*	*By Closing stock*	*1,00,00,000*	*1,50,00,000*

To Stores	*1,00,00,000*	*1,20,00,000*	*By Misc. Income*	*10,00,000*	*10,00,000*
To Manufacturing Expenses	*1,00,00,000*	*1,60,00,000*			
To Other Expenses	*1,00,00,000*	*1,00,00,000*			
To Depreciation	*1,00,00,000*	*1,00,00,000*			
To Net Profit	*1,30,00,000*	*1,80,00,000*			
	9,10,00,000	*11,60,00,000*		*9,10,00,000*	*11,60,00,000*

Sales are expected to be ₹ 12,00,00,000 in year 3.

As a result, other expenses will increase by ₹ 50,00,000 besides other charges. Only raw materials are in stock. Assume sales and purchases are in cash terms and the closing stock is expected to go up by the same amount as between year 1 and 2. You may assume that no dividend is being paid. The Company can use 75% of the cash generated to service a loan. How much cash from operations will be available in year 3 for the purpose? Ignore income tax.

Solution

Projected Profit and Loss Account for the year 3

	Year 2 Actual (₹ in lakhs)	*Year 3 Projected (₹ in lakhs)*		*Year 2 Actual (₹ in lakhs)*	*Year 3 Projected (₹ in lakhs)*
To Materials consumed	350	420	By Sales	1,000	1,200
To Stores	120	144	By Misc. Income	10	10
To Mfg. Expenses	160	192			
To Other expenses	100	150			
To Depreciation	100	100			
To Net profit	180	204			
	1,010	1,210		1,010	1,210

Cash Flow:

	(₹ in lakhs)
Profit	204
Add: Depreciation	100
	304
Less: Cash required for increase in stock	50
Net cash inflow	254

Available for servicing the loan: 75% of ₹ 2,54,00,000 or ₹ 1,90,50,000

Working Notes:

(i) Material consumed in year 2: 35% of sales.

Likely consumption in year 3 : $₹\,1{,}200 \times \frac{35}{100}$ or ₹ 420 (lakhs)

(ii) Stores are 12% of sales, as in year 2.

(iii) Manufacturing expenses are 16% of sales.

Note: The above also shows how a projected profit and loss account is prepared.

Illustration 14 *: From the information and the assumption that the cash balance in hand on 1st January 2014 is ₹ 72,500 prepare a cash budget.*

Assume that 50 per cent of total sales are cash sales. Assets are to be acquired in the months of February and April. Therefore, provisions should be made for the payment of ₹ 8,000 and ₹ 25,000 for the same. An application has been made to the bank for the grant of a loan of ₹ 30,000 and it is hoped that the loan amount will be received in the month of May.

It is anticipated that a dividend of ₹ 35,000 will be paid in June. Debtors are allowed one month's credit. Creditors for materials purchased and overheads grant one month's credit. Sales commission at 3 per cent on sales is paid to the salesman each month.

Month	*Sales (₹)*	*Materials Purchases (₹)*	*Salaries & Wages (₹)*	*Production Overheads (₹)*	*Office and Selling Overheads (₹)*
January	*72,000*	*25,000*	*10,000*	*6,000*	*5,500*
February	*97,000*	*31,000*	*12,100*	*6,300*	*6,700*
March	*86,000*	*25,500*	*10,600*	*6,000*	*7,500*
April	*88,600*	*30,600*	*25,000*	*6,500*	*8,900*
May	*1,02,500*	*37,000*	*22,000*	*8,000*	*11,000*
June	*1,08,700*	*38,800*	*23,000*	*8,200*	*11,500*

Solution

Cash Budget

	Jan ₹	*Feb ₹*	*Mar ₹*	*Apr ₹*	*May ₹*	*June ₹*	*Total ₹*
Receipts							
Cash sales	36,000	48,500	43,000	44,300	51,250	54,350	2,77,400
Collections from debtors	-	36,000	48,500	43,000	44,300	51,250	2,23,050
Bank loan	-	-	-	-	30,000	-	30,000
Total	36,000	84,500	91,500	87,300	1,25,550	1,05,600	5,30,450
Payments							

Materials	-	25,000	31,000	25,500	30,600	37,000	1,49,100
Salaries and wages	10,000	12,100	10,600	25,000	22,000	23,000	1,02,700
Production overheads	-	6,000	6,300	6,000	6,500	8,000	32,800
Office & selling overheads	-	5,500	6,700	7,500	8,900	11,000	39,600
Sales commission	2,160	2,910	2,580	2,658	3,075	3,261	16,644
Capital expenditure	-	8,000	-	25,000	-	-	33,000
Dividend	-	-	-	-	-	35,000	35,000
Total	12,160	59,510	57,180	91,658	71,075	1,17,261	4,08,844
Net cash flow	23,840	24,990	34,320	(4,358)	54,475	(11,661)	1,21,606
Balance, beginning of month	72,500	96,340	1,21,330	1,55,650	1,51,292	2,05,767	1,94,106
Balance, end of month	96,340	1,21,330	1,55,650	1,51,292	2,05,767	1,94,106	3,15,712

Illustration 15 : *Consider the balance sheet of Maya Limited at December 31 (in thousands). The company has received a large order and anticipates the need to go to its bank to increase its borrowings. As a result, it has to forecast its cash requirements for January, February and March. Typically, the company collects 20 per cent of its sales in the month of sale, 70 per cent in the subsequent month, and 10 per cent in the second month after the sale. All sales are credit sales.*

	₹		₹
Cash	*50*	*Accounts payable*	*360*
Accounts receivable	*530*	*Bank loan*	*400*
Inventories	*545*	*Accruals*	*212*
Current assets	*1,125*	*Current liabilities*	*972*
Net fixed assets	*1,836*	*Long-term debt*	*450*
		Common stock	*100*
		Retained earnings	*1,439*
Total assets	*2,961*	*Total liabilities and equity*	*2,961*

Purchases of raw materials are made in the month prior to the sale and amount to 60 per cent of sales in the subsequent month. Payments for these purchases occur in the month after the purchase. Labour costs, including overtime, are expected to be ₹ 1,50,000 in January, ₹ 2,00,000 in February, and ₹ 1,60,000 in March. Selling, administrative, taxes, and other cash expenses are expected to be ₹ 1,00,000 per month for January through March. Actual sales in November and December and projected sales for January through April are as follows (in thousands):

	₹		₹		₹
November	*500*	*January*	*600*	*March*	*650*
December	*600*	*February*	*1,000*	*April*	*750*

On the basis of this information:

(a) Prepare a cash budget for the months of January, February, and March.

(b) Determine the amount of additional bank borrowings necessary to maintain a cash balance of ₹ 50,000 at all times.

(c) Prepare a pro forma balance sheet for March 31.

Solution

(a) Cash Budget *(in thousands)*

	Nov.	*Dec.*	*Jan.*	*Feb.*	*Mar.*	*Apr.*
	₹	*₹*	*₹*	*₹*	*₹*	*₹*
Sales	500	600	600	1,000	650	750
Collections, current month's sales			120	200	130	
Collections, previous month's sales			420	420	700	
Collections, previous 2 month's sales			50	60	60	
Total cash receipts			590	680	890	
Purchases		360	600	390	450	
Payment for purchases			360	600	390	
Labour costs			150	200	160	
Other expenses			100	100	100	
Total cash disbursements			610	900	650	
Receipts less disbursements			(20)	(220	240	

(b)

	Jan.	*Feb.*	*Mar.*
	₹	*₹*	*₹*
Additional borrowings	20	220	(240)
Cumulative borrowings	420	640	400

The amount of financing peaks in February owing to the need to pay for purchases made the previous month and higher labour costs. In March, substantial collections are made on the prior month's billings, causing large net cash inflow sufficient to pay off the additional borrowings.

(c) Pro forma Balance Sheet, March 31 (in thousands):

	₹		*₹*
Cash	50	Accounts payable	450
Accounts receivable	620	Bank loan	400
Inventories	635	Accruals	212
Current assets	1,305	Current liabilities	1,062
Net fixed assets	1,836	Long-term debt	450
		Common stock	100
	_____	Retained earnings	1,529

Total assets	3,141	Total liabilities and equity	3,141

Accounts receivable = Sales in March × 0.8 + Sales in February × 0.1

Inventories = ₹ 545 + Total purchases January through March – Total sales January through March × 0.6

Accounts payable = Purchases in March

Retained earnings = ₹ 1,439 + Sales – Payment for purchases – Labour costs and – Other expenses, all for January through March

7.10.3 Managing Cash Collection and Disbursements

Having prepared the cash budget, the finance manager should ensure that there is not a significant deviation between projected cash flows and actual cash flows.

To achieve this cash management efficiency will have to be improved through a proper control of cash collection and disbursement.

The twin objectives in managing the cash flows should be:-

- Accelerate cash collections as much as possible; and
- Decelerate or delay cash disbursements.

Let's discuss each of the two objectives individually.

7.10.4 Accelerating Cash Collections

A firm can conserve cash and reduce its requirements for cash balances if it can speed up its cash collections by issuing invoices quickly or by reducing the time lag between a customer pays bill and the cheque is collected and funds become available for the firm's use.

A firm can use decentralized collection system known as concentration banking and lock box system to speed up cash collection and reduce float time.

(i) Concentration Banking: In concentration banking the company establishes a number of strategic collection centres in different regions instead of a single collection centre at the head office. This system reduces the period between the time a customer mails in his remittances and the time when they become spendable funds with the company. Payments received by the different collection centers are deposited with their respective local banks which in turn transfer all surplus funds to the concentration bank of head office. The concentration bank with which the company has its major bank account is generally located at the headquarters. Concentration banking is one important and popular way of reducing the size of the float.

(ii) Lock Box System: Another means to accelerate the flow of funds is a lock box system. While concentration banking, remittances are received by a collection centre and deposited in the bank after processing. The purpose of lock box system is to eliminate

the time between the receipts of remittances by the company and deposited in the bank. A lock box arrangement usually is on regional basis which a company chooses according to its billing patterns.

Under this arrangement, the company rents the local post-office box and authorizes its bank at each of the locations to pick up remittances in the boxes. Customers are billed with instructions to mail their remittances to the lock boxes. The bank picks up the mail several times a day and deposits the cheques in the company's account. The cheques may be micro-filmed for record purposes and cleared for collection. The company receives a deposit slip and lists all payments together with any other material in the envelope. This procedure frees the company from handling and depositing the cheques.

The main advantage of lock box system is that cheques are deposited with the banks sooner and become collected funds sooner than if they were processed by the company prior to deposit. In other words lag between the time cheques are received by the company and the time they are actually deposited in the bank is eliminated.

The main drawback of lock box system is the cost of its operation. The bank provides a number of services in addition to usual clearing of cheques and requires compensation for them. Since the cost is almost directly proportional to the number of cheques deposited. Lock box arrangements are usually not profitable if the average remittance is small. The appropriate rule for deciding whether or not to use a lock box system or for that matter, concentration banking, is simply to compare the added cost of the most efficient system with the marginal income that can be generated from the released funds. If costs are less than income, the system is profitable, if the system is not profitable, it is not worth undertaking.

Different Kinds of Float with reference to Management of Cash: The term float is used to refer to the periods that affect cash as it moves through the different stages of the collection process. Four kinds of float with reference to management of cash are:

- *Billing float:* An invoice is the formal document that a seller prepares and sends to the purchaser as the payment request for goods sold or services provided. The time between the sale and the mailing of the invoice is the billing float.
- *Mail float:* This is the time when a cheque is being processed by post office, messenger service or other means of delivery.
- *Cheque processing float:* This is the time required for the seller to sort, record and deposit the cheque after it has been received by the company.
- *Banking processing float:* This is the time from the deposit of the cheque to the crediting of funds in the sellers account.

7.10.5 Controlling Payments

An effective control over payments can also cause faster turnover of cash. This is possible only by making payments on the due date, making excessive use of draft (bill of exchange) instead of cheques.

Availability of cash can be maximized by playing the float. In this, a firm estimates accurately the time when the cheques issued will be presented for encashment and thus utilizes the float period to its advantage by issuing more cheques but having in the bank account only so much cash balance as will be sufficient to honour those cheques which are actually expected to be presented on a particular date.

Also company may make payment to its outstation suppliers by a cheque and send it through mail. The delay in transit and collection of the cheque, will be used to increase the float.

Illustration 16 : *Prachi Ltd is a manufacturing company producing and selling a range of cleaning products to wholesale customers. It has three suppliers and two customers. Prachi Ltd relies on its cleared funds forecast to manage its cash.*

You are an accounting technician for the company and have been asked to prepare a cleared funds forecast for the period Monday 7 January to Friday 11 January 2014 inclusive. You have been provided with the following information:

(1) Receipts from customers

Customer name	*Credit terms*	*Payment method*	*7 Jan 2014 sales*	*7 Dec 2013 sales*
W Ltd	*1 calendar month*	*BACS*	*₹ 150,000*	*₹ 130,000*
X Ltd	*None*	*Cheque*	*₹ 180,000*	*₹ 160,000*

(a) Receipt of money by BACS (Bankers' Automated Clearing Services) is instantaneous.

(b) X Ltd's cheque will be paid into Prachi Ltd's bank account on the same day as the sale is made and will clear on the third day following this (excluding day of payment).

(2) Payments to suppliers

Supplier name	*Credit terms*	*Payment method*	*7 Jan 2014 purchases*	*7 Dec 2013 purchases*	*7 Nov 2013 purchases*
A Ltd	*1 calendar month*	*Standing order*	*₹ 65,000*	*₹ 55,000*	*₹ 45,000*
B Ltd	*2 calendar months*	*Cheque*	*₹ 85,000*	*₹ 80,000*	*₹ 75,000*
C Ltd	*None*	*Cheque*	*₹ 95,000*	*₹ 90,000*	*₹ 85,000*

(a) Prachi Ltd has set up a standing order for ₹ 45,000 a month to pay for supplies from A Ltd. This will leave Prachi's bank account on 7 January. Every few months,

an adjustment is made to reflect the actual cost of supplies purchased (you do NOT need to make this adjustment).

(b) Prachi Ltd will send out, by post, cheques to B Ltd and C Ltd on 7 January. The amounts will leave its bank account on the second day following this (excluding the day of posting).

(3) Wages and salaries

	December 2013	*January 2014*
Weekly wages	*₹ 12,000*	*₹ 13,000*
Monthly salaries	*₹ 56,000*	*₹ 59,000*

(a) Factory workers are paid cash wages (weekly). They will be paid one week's wages, on 11 January, for the last week's work done in December (i.e. they work a week in hand).

(b) All the office workers are paid salaries (monthly) by BACS. Salaries for December will be paid on 7 January.

(4) Other miscellaneous payments

(a) Every Monday morning, the petty cashier withdraws ₹ 200 from the company bank account for the petty cash. The money leaves Prachi's bank account straight away.

(b) The room cleaner is paid ₹ 30 from petty cash every Wednesday morning.

(c) Office stationery will be ordered by telephone on Tuesday 8 January to the value of ₹ 300. This is paid for by company debit card. Such payments are generally seen to leave the company account on the next working day.

(d) Five new softwares will be ordered over the Internet on 10 January at a total cost of ₹ 6,500. A cheque will be sent out on the same day. The amount will leave Prachi Ltd's bank account on the second day following this (excluding the day of posting).

(5) Other information

The balance on Prachi's bank account will be ₹ 200,000 on 7 January 2014. This represents both the book balance and the cleared funds.

Required:

Prepare a cleared funds forecast for the period Monday 7 January to Friday 7 January 2014 inclusive using the information provided. Show clearly the uncleared funds float each day.

Solution:

Cleared Funds Forecast

	7 Jan 14 (Monday)	8 Jan 14 (Tuesday)	9 Jan 14 (Wednesday)	10 Jan 14 (Thursday)	11 Jan 14 (Friday)
	₹	₹	₹	₹	₹
Receipts					
W Ltd	1,30,000	0	0	0	0

X Ltd	0	0	0	1,80,000	0
(a)	1,30,000	0	0	1,80,000	0
Payments					
A Ltd	45,000	0	0	0	0
B Ltd	0	0	75,000	0	0
C Ltd	0	0	95,000	0	0
Wages	0	0	0	0	12,000
Salaries	56,000	0	0	0	0
Petty Cash	200	0	0	0	0
Stationery	0	0	300	0	0
(b)	1,01,200	0	1,70,300	0	12,000
Cleared excess Receipts over payments (a) – (b)	28,800	0	(170,300)	80,000	(12,000)
Cleared balance b/f	200,000	228,800	228,800	58,500	238,500
Cleared balance c/f (c)	2,28,800	2,28,800	58,500	2,38,500	2,26,500
Uncleared funds float					
Receipts	180,000	180,000	180,000	0	0
Payments	(170,000)	(170,300)	0	(6,500)	(6,500)
(d)	10,000	9,700	180,000	(6,500)	(6,500)
Total book balance c/f (c) + (d)	2,38,800	2,38,500	2,38,500	2,32,000	2,20,000

7.10.6 Determining the Optimum Cash Balance

A firm should maintain optimum cash balance to cater to the day-to-day operations. It may also carry additional cash as a buffer or safety stock. The amount of cash balance will depend on the risk-return trade off. The firm should maintain an optimum level i.e. just enough, i.e. neither too much nor too little cash balance. This, however, poses a question. How to determine the optimum cash balance if cash flows are predictable and if they are not predictable?

7.11 Cash Management Models

In recent years several types of mathematical models have been developed which helps to determine the optimum cash balance to be carried by a business organization.

The purpose of all these models is to ensure that cash does not remain idle unnecessarily and at the same time the firm is not confronted with a situation of cash shortage.

All these models can be put in two categories:-

- Inventory type models; and

- Stochastic models.

Inventory type models have been constructed to aid the finance manager to determine optimum cash balance of his firm. William J. Baumol's economic order quantity model applies equally to cash management problems under conditions of certainty or where the cash flows are predictable.

However, in a situation where the EOQ Model is not applicable, stochastic model of cash management helps in determining the optimum level of cash balance. It happens when the demand for cash is stochastic and not known in advance.

7.11.1 William J. Baumol's Economic Order Quantity Model, (1952)

According to this model, optimum cash level is that level of cash where the carrying costs and transactions costs are the minimum.

The carrying costs refer to the cost of holding cash, namely, the interest foregone on marketable securities. The transaction costs refer to the cost involved in getting the marketable securities converted into cash. This happens when the firm falls short of cash and has to sell the securities resulting in clerical, brokerage, registration and other costs.

The optimum cash balance according to this model will be that point where these two costs are minimum. The formula for determining optimum cash balance is:

$$C = \sqrt{\frac{2U \times P}{S}}$$

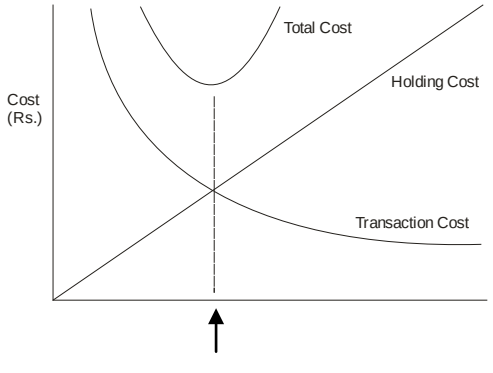
Where, C = Optimum cash balance

U = Annual (or monthly) cash disbursement

P = Fixed cost per transaction.

S = Opportunity cost of one rupee p.a. (or p.m.)

This can be explained with the following diagram:



The model is based on the following assumptions:

(i) Cash needs of the firm are known with certainty.

(ii) The cash is used uniformly over a period of time and it is also known with certainty.

(iii) The holding cost is known and it is constant.

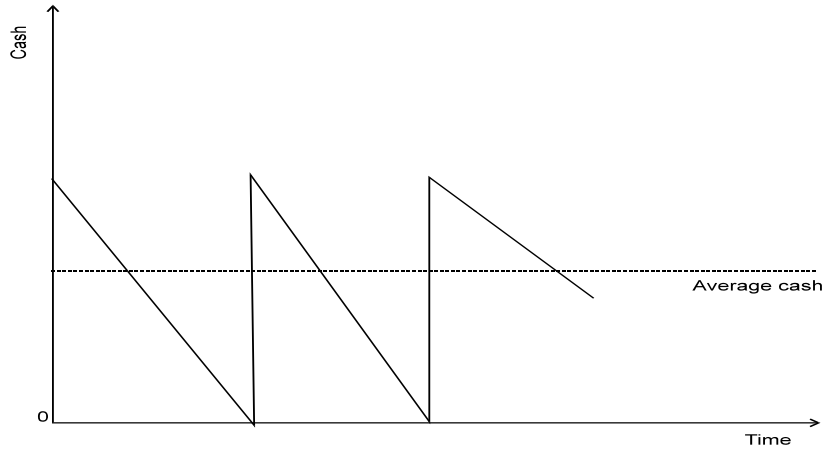
(iv) The transaction cost also remains constant.

Illustration 17 : *A firm maintains a separate account for cash disbursement. Total disbursement are ₹ 1,05,000 per month or ₹ 12,60,000 per year. Administrative and transaction cost of transferring cash to disbursement account is ₹ 20 per transfer. Marketable securities yield is 8% per annum.*

Determine the optimum cash balance according to William J. Baumol model.

Solution

The optimum cash balance C = $\sqrt{\frac{2\times ₹12,60,000\times ₹20}{0.08}} = ₹\ 25,100$



The limitation of the Baumol's model is that it does not allow the cash flows to fluctuate. Firms in practice do not use their cash balance uniformly nor are they able to predict daily cash inflows and outflows. The Miller-Orr (MO) model overcomes this shortcoming and allows for daily cash flow variation.

7.11.2 Miller-Orr Cash Management Model (1966)

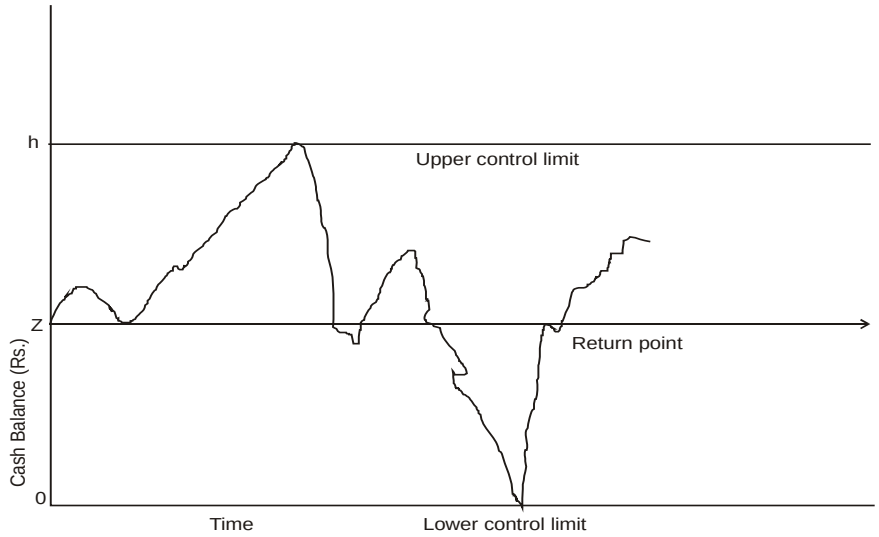
According to this model the net cash flow is completely stochastic.

When changes in cash balance occur randomly the application of control theory serves a useful purpose. The Miller-Orr model is one of such control limit models.

This model is designed to determine the time and size of transfers between an investment account and cash account. In this model control limits are set for cash balances. These limits may consist of h as upper limit, z as the return point; and zero as the lower limit.

- When the cash balance reaches the upper limit, the transfer of cash equal to h – z is invested in marketable securities account.
- When it touches the lower limit, a transfer from marketable securities account to cash account is made.
- During the period when cash balance stays between (h, z) and (z, 0) i.e. high and low limits no transactions between cash and marketable securities account is made.

The high and low limits of cash balance are set up on the basis of fixed cost associated with the securities transactions, the opportunity cost of holding cash and the degree of likely fluctuations in cash balances. These limits satisfy the demands for cash at the lowest possible total costs. The following diagram illustrates the Miller-Orr model.



The MO Model is more realistic since it allows variations in cash balance within lower and upper limits. The finance manager can set the limits according to the firm's liquidity requirements i.e., maintaining minimum and maximum cash balance.

7.12 Recent Developments in Cash Management

It is important to understand the latest developments in the field of cash management, since it has a great impact on how we manage our cash. Both technological advancement and desire to reduce cost of operations has led to some innovative techniques in managing cash. Some of them are:-

7.12.1 Electronic Fund Transfer

With the developments which took place in the Information technology, the present banking system is switching over to the computerisation of banks branches to offer efficient banking services and cash management services to their customers. The network will be linked to the different branches, banks. This will help the customers in the following ways:

- Instant updation of accounts.
- The quick transfer of funds.
- Instant information about foreign exchange rates.

7.12.2 Zero Balance Account

For efficient cash management some firms employ an extensive policy of substituting marketable securities for cash by the use of zero balance accounts. Every day the firm totals the cheques presented for payment against the account. The firm transfers the balance amount of cash in the account if any, for buying marketable securities. In case of shortage of cash the firm sells the marketable securities.

7.12.3 Money Market Operations

One of the tasks of *'treasury function'* of larger companies is the investment of surplus funds in the money market. The chief characteristic of money market banking is one of size. Banks obtain funds by competing in the money market for the deposits by the companies, public authorities, High Net worth Investors (HNI), and other banks. Deposits are made for specific periods ranging from overnight to one year; highly competitive rates which reflect supply and demand on a daily, even hourly basis are quoted. Consequently, the rates can fluctuate quite dramatically, especially for the shorter-term deposits. Surplus funds can thus be invested in money market easily.

7.12.4 Petty Cash Imprest System

For better control on cash, generally the companies use petty cash imprest system wherein the day-to-day petty expenses are estimated taking into account past experience and future needs and generally a week's requirement of cash will be kept separate for making petty expenses. Again, the next week will commence with the pre-determined balance. This will reduce the strain of the management in managing petty cash expenses and help in the managing cash efficiently.

7.12.5 Management of Temporary Cash Surplus

Temporary cash surpluses can be profitably invested in the following:

- Short-term deposits in Banks and financial institutions.
- Short-term debt market instruments.
- Long-term debt instruments.

- Shares of Blue chip listed companies.

7.12.6 Electronic Cash Management System

Most of the cash management systems now-a-days are electronically based, since 'speed' is the essence of any cash management system. Electronically, transfer of data as well as funds play a key role in any cash management system. Various elements in the process of cash management are linked through a satellite. Various places that are interlinked may be the place where the instrument is collected, the place where cash is to be transferred in company's account, the place where the payment is to be transferred etc.

Certain networked cash management system may also provide a very limited access to third parties like parties having very regular dealings of receipts and payments with the company etc. A finance company accepting deposits from public through sub-brokers may give a limited access to sub-brokers to verify the collections made through him for determination of his commission among other things.

Electronic-scientific cash management results in:

- Significant saving in time.
- Decrease in interest costs.
- Less paper work.
- Greater accounting accuracy.
- More control over time and funds.
- Supports electronic payments.
- Faster transfer of funds from one location to another, where required.
- Speedy conversion of various instruments into cash.
- Making available funds wherever required, whenever required.
- Reduction in the amount of 'idle float' to the maximum possible extent.
- Ensures no idle funds are placed at any place in the organization.
- It makes inter-bank balancing of funds much easier.
- It is a true form of centralised 'Cash Management'.
- Produces faster electronic reconciliation.
- Allows for detection of book-keeping errors.
- Reduces the number of cheques issued.
- Earns interest income or reduce interest expense.

7.12.7 Virtual Banking

The practice of banking has undergone a significant change in the nineties. While banks are striving to strengthen customer base and relationship and move towards relationship banking,

customers are increasingly moving away from the confines of traditional branch banking and are seeking the convenience of remote electronic banking services. And even within the broad spectrum of electronic banking the virtual banking has gained prominence

Broadly virtual banking denotes the provision of banking and related services through extensive use of information technology without direct recourse to the bank by the customer. The origin of virtual banking in the developed countries can be traced back to the seventies with the installation of Automated Teller Machines (ATMs). Subsequently, driven by the competitive market environment as well as various technological and customer pressures, other types of virtual banking services have grown in prominence throughout the world.

The Reserve Bank of India has been taking a number of initiatives, which will facilitate the active involvement of commercial banks in the sophisticated cash management system. One of the pre-requisites to ensure faster and reliable mobility of funds in a country is to have an efficient payment system. Considering the importance of speed in payment system to the economy, the RBI has taken numerous measures since mid-Eighties to strengthen the payments mechanism in the country.

Introduction of computerized settlement of clearing transactions, use of Magnetic Ink Character Recognition (MICR) technology, provision of inter-city clearing facilities and high value clearing facilities, Electronic Clearing Service Scheme (ECSS), Electronic Funds Transfer (EFT) scheme, Delivery vs. Payment (DVP) for Government securities transactions, setting up of Indian Financial Network (INFINET) are some of the significant developments.

Introduction of Centralised Funds Management System (CFMS), Securities Services System (SSS), Real Time Gross Settlement System (RTGS) and Structured Financial Messaging System (SFMS) are the other top priority items on the agenda to transform the existing system into a state-of-the art payment infrastructure in India.

The current vision envisaged for the payment systems reforms is one, which contemplates linking up of at least all important bank branches with the domestic payment systems network thereby facilitating cross border connectivity. With the help of the systems already put in place in India and which are coming into being, both banks and corporates can exercise effective control over the cash management.

Advantages

The advantages of virtual banking services are as follows:

- Lower cost of handling a transaction.
- The increased speed of response to customer requirements.
- The lower cost of operating branch network along with reduced staff costs leads to cost efficiency.
- Virtual banking allows the possibility of improved and a range of services being made available to the customer rapidly, accurately and at his convenience.

The popularity which virtual banking services have won among customers is due to the speed, convenience and round the clock access they offer.

7.13 Management of Marketable Securities

Management of marketable securities is an integral part of investment of cash as this may serve both the purposes of liquidity and cash, provided choice of investment is made correctly. As the working capital needs are fluctuating, it is possible to park excess funds in some short term securities, which can be liquidated when need for cash is felt. The selection of securities should be guided by three principles.

- *Safety*: Return and risks go hand in hand. As the objective in this investment is ensuring liquidity, minimum risk is the criterion of selection.
- *Maturity:* Matching of maturity and forecasted cash needs is essential. Prices of long term securities fluctuate more with changes in interest rates and are therefore, more risky.
- *Marketability:* It refers to the convenience, speed and cost at which a security can be converted into cash. If the security can be sold quickly without loss of time and price it is highly liquid or marketable.

The choice of marketable securities is mainly limited to Government treasury bills, Deposits with banks and Inter-corporate deposits. Units of Unit Trust of India and commercial papers of corporates are other attractive means of parking surplus funds for companies along with deposits with sister concerns or associate companies.

Besides this Money Market Mutual Funds (MMMFs) have also emerged as one of the avenues of short-term investment. They focus on short-term marketable securities such as Treasury bills, commercial papers certificate of deposits or call money market. There is a lock in period of 30 days after which the investment may be converted into cash. They offer attractive yields, and are popular with institutional investors and some big companies.

Illustration 18 : *The following information is available in respect of Saitrading company:*

(i) On an average, debtors are collected after 45 days; inventories have an average holding period of 75 days and creditor's payment period on an average is 30 days.

(ii) The firm spends a total of ₹ 120 lakhs annually at a constant rate.

(iii) It can earn 10 per cent on investments.

From the above information, you are required to calculate:

(a) The cash cycle and cash turnover,

(b) Minimum amounts of cash to be maintained to meet payments as they become due,

(c) Savings by reducing the average inventory holding period by 30 days.

Solution

(a) Cash cycle = 45 days + 75 days – 30 days = 90 days (3 months)

Cash turnover = 12 months (360 days)/3 months (90 days) = 4.

(b) Minimum operating cash = Total operating annual outlay/cash turnover, that is, ₹ 120 lakhs/4 = ₹ 30 lakhs.

(c) Cash cycle = 45 days + 45 days – 30 days = 60 days (2 months).

Cash turnover = 12 months (360 days)/2 months (60 days) = 6.

Minimum operating cash = ₹ 120 lakhs/6 = ₹ 20 lakhs.

Reduction in investments = ₹ 30 lakhs – ₹ 20 lakhs = ₹ 10 lakhs.

Savings = 0.10 × ₹ 10 lakhs = ₹ 1 lakh.

7.14 Inventory Management

Inventories constitute a major element of working capital. It is, therefore, important that investment in inventory is property controlled. The objectives of inventory management are, to a great extent, similar to the objectives of cash management. Inventory management covers a large number of problems including fixation of minimum and maximum levels, determining the size of inventory to be carried, deciding about the issues, receipts and inspection procedures, determining the economic order quantity, proper storage facilities, keeping check over obsolescence and ensuring control over movement of inventories.

The aspects concerning control over inventories have been discussed in Paper 3 : Part 1 - Cost Accounting.

Some illustrations are given for your practice.

Illustration 19 : *A company's requirements for ten days are 6,300 units. The ordering cost per order is ₹ 10 and the carrying cost per unit is ₹ 0.26. You are required to calculate the economic order quantity.*

Solution

The economic order quantity is:

$$EOQ = \sqrt{\frac{2 \times 6,300 \times 10}{0.26}} = \sqrt{\frac{1,26,000}{0.26}} = 700 \text{ units (approx).}$$

Illustration 20 *: Marvel Limited uses a large quantity of salt in its production process. Annual consumption is 60,000 tonnes over a 50-week working year. It costs ₹ 100 to initiate and process an order and delivery follow two weeks later. Storage costs for the salt are estimated at 10 paise per tonne per annum. The current practice is to order twice a year when the stock falls to 10,000 tonnes. Recommend an appropriate ordering policy for Marvel Limited, and contrast it with the cost of the current policy.*

Solution

The recommended policy should be based on the EOQ model.

F = ₹ 100 per order

S = 60,000 tonnes per year

H = ₹ 0.10 per tonne per year

Substituting : $EOQ = \sqrt{\frac{2 \times 100 \times 60,000}{0.10}}$ = 10,954 tonnes per order

Number of orders per year = 60,000/10,954 = 5.5 orders

Re-order level = 2×60,000/50 = 2,400 tonnes

Total cost of optimum policy = holding costs + ordering costs

= (0.1×10954)/2 + (100×60,000)/10,954

= 547.70 + 547.74 = ₹ 1,095

To compare the optimum policy with the current policy, the average level of stock under the current policy must be found. An order is placed when stock falls to 10,000 tonnes, but the lead time is two weeks. The stock used in that time is (60,000×2)/50 = 2,400 tonnes. Before delivery, inventory has fallen to (10,000 – 2,400) = 7,600 tonnes. Orders are made twice per year, and so the order size = 60,000/2 = 30,000 tonnes. The order will increase stock level to 30,000 + 7,600 = 37,600 tonnes. Hence the average stock level = 7,600 + (30,000/2) = 22,600 tonnes. Total costs of current policy = (0.1×22,600) + (100×2) = ₹ 2,460 per year.

Advise: The recommended policy should be adopted as the costs (₹ 1,365 per year) are less than the current policy.

Illustration 21 *: Pureair Company is a distributor of air filters to retail stores. It buys its filters from several manufacturers. Filters are ordered in lot sizes of 1,000 and each order costs ₹ 40 to place. Demand from retail stores is 20,000 filters per month, and carrying cost is ₹ 0.10 a filter per month.*

(a) What is the optimal order quantity with respect to so many lot sizes?

(b) What would be the optimal order quantity if the carrying cost were ₹ 0.05 a filter per month?

(c) What would be the optimal order quantity if ordering costs were ₹ 10?

Solution

(a) $EOQ^* = \sqrt{\frac{2(20)(40)}{100}} = 4$

Carrying costs = ₹ 0.10 × 1,000 = ₹ 100. The optimal order size would be 4,000 filters, which represents five orders a month.

(b) $EOQ^* = \sqrt{\frac{2(20)(40)}{50}} = 5.66$

Since the lot size is 1,000 filters, the company would order 6,000 filters each time. The lower the carrying cost, the more important ordering costs become relatively, and the larger the optimal order size.

(c) $EOQ^* = \sqrt{\frac{2(20)(10)}{100}} = 2$

The lower the order cost, the more important carrying costs become relatively and the smaller the optimal order size.

UNIT – IV : MANAGEMENT OF RECEIVABLES

7.15 Introduction

The basic objective of management of sundry debtors is to optimise the return on investment on these assets known as receivables.

Large amounts are tied up in sundry debtors, there are chances of bad debts and there will be cost of collection of debts. On the contrary, if the investment in sundry debtors is low, the sales may be restricted, since the competitors may offer more liberal terms. Therefore, management of sundry debtors is an important issue and requires proper policies and their implementation.

7.16 Aspects of Management of Debtors

There are basically three aspects of management of sundry debtors:

1. *Credit Policy:* The credit policy is to be determined. It involves a trade off between the profits on additional sales that arise due to credit being extended on the one hand and the cost of carrying those debtors and bad debt losses on the other. This seeks to decide credit period, cash discount and other relevant matters. The credit period is generally stated in terms of net days. For example if the firm's credit terms are "net 50". It is expected that customers will repay credit obligations not later than 50 days.

   Further, the cash discount policy of the firm specifies:

   (a) The rate of cash discount.

   (b) The cash discount period; and

   (c) The net credit period.

   For example, the credit terms may be expressed as "3/15 net 60". This means that a 3% discount will be granted if the customer pays within 15 days; if he does not avail the offer he must make payment within 60 days.

2. *Credit Analysis:* This requires the finance manager to determine as to how risky it is to advance credit to a particular party.

3. *Control of Receivable:* This requires finance manager to follow up debtors and decide about a suitable credit collection policy. It involves both laying down of credit policies and execution of such policies.

   There is always cost of maintaining receivables which comprises of following costs:

   (i) The company requires additional funds as resources are blocked in receivables which involves a cost in the form of interest (loan funds) or opportunity cost (own funds)

   (ii) Administrative costs which include record keeping, investigation of credit worthiness etc.

(iii) Collection costs.

(iv) Defaulting costs.

7.17 Factors Determining Credit Policy

The credit policy is an important factor determining both the quantity and the quality of accounts receivables. Various factors determine the size of the investment a company makes in accounts receivables. They are, for instance:

(i) The effect of credit on the volume of sales;

(ii) Credit terms;

(iii) Cash discount;

(iv) Policies and practices of the firm for selecting credit customers;

(v) Paying practices and habits of the customers;

(vi) The firm's policy and practice of collection; and

(vii) The degree of operating efficiency in the billing, record keeping and adjustment function, other costs such as interest, collection costs and bad debts etc., would also have an impact on the size of the investment in receivables. The rising trend in these costs would depress the size of investment in receivables.

The firm may follow a lenient or a stringent credit policy. The firm which follows a lenient credit policy sells on credit to customers on very liberal terms and standards. On the contrary a firm following a stringent credit policy sells on credit on a highly selective basis only to those customers who have proper credit worthiness and who are financially sound.

Any increase in accounts receivables that is, additional extension of trade credit not only results in higher sales but also requires additional financing to support the increased investment in accounts receivables. The costs of credit investigations and collection efforts and the chances of bad debts are also increased.

7.18 Factors under the Control of the Finance Manager

The finance manager has operating responsibility for the management of the investment in receivables. His involvement includes:-

(a) Supervising the administration of credit;

(b) Contribute to top management decisions relating to the best credit policies of the firm;

(c) Deciding the criteria for selection of credit applications; and

(d) Speed up the conversion of receivables into cash by aggressive collection policy.

In summary the finance manager has to strike a balance between the cost of increased investment in receivables and profits from the higher levels of sales.

7.19 Approaches to Evaluation of Credit Policies

There are basically two methods of evaluating the credit policies to be adopted by a Company – Total Approach and Incremental Approach. The formats for the two approaches are given as under:

Statement showing the Evaluation of Credit Policies (based on Total Approach)

Particulars	*Present Policy*	*Proposed Policy I*	*Proposed Policy II*	*Proposed Policy III*
	₹	₹	₹	₹
A. Expected Profit:				
Credit Sales	.....	.....	.....	.....
Total Cost other than Bad Debts and Cash Discount				
(i) Variable Costs	.....	.....	.....	.....
(ii) Fixed Costs	.....	.....	.....	.....
	.....	.....	.....	.....
Bad Debts	.....	.....	.....	.....
Expected Net Profit before Tax	.....	.....	.....	.....
Less: Tax	.....	.....	.....	.....
Expected Profit after Tax	.....	.....	.....	.....
B. Opportunity Cost of Investments in Receivables locked up in Collection Period	.....	.....	.....	.....
Net Benefits (A – B)	.....	.....	.....	.....

Advise: The Policy..... should be adopted since the net benefits under this policy are higher as compared to other policies.

Working Notes:

(i) Total Fixed Cost = [Average Cost per unit – Variable Cost per unit] x No. of units sold on credit under Present Policy

(ii) Opportunity Cost = Total Cost of Credit Sales x $\frac{\text{Collection period (Days)}}{365 \text{ (or } 360)} \text{ x } \frac{\text{Required Rate of Return}}{100}$

Statement showing the Evaluation of Credit Policies (based on Incremental Approach)

Particulars	*Present Policy days*	*Proposed Policy I days*	*Proposed Policy II days*	*Proposed Policy III days*
	₹	₹	₹	₹
A. Incremental Expected Profit:				
Credit Sales	.....	.....	.....	.....
Incremental Credit Sales	.....	.....	.....	.....
Less: Incremental Costs of Credit Sales				
(i) Variable Costs	.....	.....	.....	.....
(ii) Fixed Costs	.....	.....	.....	.....
Incremental Bad Debt Losses	.....	.....	.....	.....
Incremental Cash Discount	.....	.....	.....	.....
Incremental Expected Profit	.....	.....	.....	.....
Less: Tax	.....	.....	.....	.....
Incremental Expected Profit after Tax	.....	.....	.....	.....
	.....	.....	.....	.....
B. Required Return on Incremental Investments:				
(a) Cost of Credit Sales	.....	.....	.....	.....
(b) Collection Period (in days)	.....	.....	.....	.....
(c) Investment in Receivable (a x b/365 or 360)	.....	.....	.....	.....
(d) Incremental Investment in Receivables	.....	.....	.....	.....
(e) Required Rate of Return (in %)	.....	.....	.....	.....
(f) Required Return on Incremental Investments (d x e)	.....	.....	.....	.....
Incremental Net Benefits (A – B)	.....	.....	.....	.....

Advise: The Policy .....should be adopted since net benefits under this policy are higher as compared to other policies.

Working Notes:

(i) Total Fixed Cost = [Average Cost per unit – Variable Cost per unit] x No. of units sold on credit under Present Policy

(ii) Opportunity Cost = Total Cost of Credit Sales x $\frac{\text{Collection period (Days)}}{365 \text{ (or } 360)} \times \frac{\text{Required Rate of Return}}{100}$

Illustration 22 : *A trader whose current sales are in the region of ₹ 6 lakhs per annum and an average collection period of 30 days wants to pursue a more liberal policy to improve sales. A study made by a management consultant reveals the following information:-*

Credit Policy	*Increase in collection period*	*Increase in sales*	*Present default anticipated*
A	*10 days*	*₹ 30,000*	*1.5%*
B	*20 days*	*₹ 48,000*	*2%*
C	*30 days*	*₹ 75,000*	*3%*
D	*45 days*	*₹ 90,000*	*4%*

The selling price per unit is ₹ 3. Average cost per unit is ₹ 2.25 and variable costs per unit are ₹ 2.

The current bad debt loss is 1%. Required return on additional investment is 20%. Assume a 360 days year.

Which of the above policies would you recommend for adoption?

Solution

A. Statement showing the Evaluation of Debtors Policies (Total Approach)

Particulars		*Present Policy 30 days*	*Proposed Policy A 40 days*	*Proposed Policy B 50 days*	*Proposed Policy C 60 days*	*Proposed Policy D 75 days*
		₹	*₹*	*₹*	*₹*	*₹*
A.	Expected Profit:					
	(a) Credit Sales	6,00,000	6,30,000	6,48,000	6,75,000	6,90,000
	(b) Total Cost other than Bad Debts					
	(i) Variable Costs	4,00,000	4,20,000	4,32,000	4,50,000	4,60,000
	[Sales x ₹ 2/₹ 3]					
	(ii) Fixed Costs	50,000	50,000	50,000	50,000	50,000
		4,50,000	4,70,000	4,82,000	5,00,000	5,10,000
	(c) Bad Debts	6,000	9,450	12,960	20,250	27,600
	(d) Expected Profit [(a) – (b) – (c)]	1,44,000	1,50,550	1,53,040	1,54,750	1,52,400
B.	Opportunity Cost of Investments in Receivables	7,500	10,444	13,389	16,667	21,250
C.	Net Benefits (A – B)	1,36,500	1,40,106	1,39,651	1,38,083	1,31,150

Recommendation: The Proposed Policy A (40 days) should be adopted since the net benefits under this policy are higher as compared to other policies.

Working Notes:

(i) Calculation of Fixed Cost = [Average Cost per unit – Variable Cost per unit] x No. of Units sold

= [₹ 2.25 - ₹ 2.00] x (₹ 6,00,000/3)

= ₹ 0.25 x 2,00,000 = ₹ 50,000

(ii) Calculation of Opportunity Cost of Average Investments

$$\text{Opportunity Cost} = \text{Total Cost} \times \frac{\text{Collection period}}{360} \times \frac{\text{Rate of Return}}{100}$$

Present Policy $= 4,50,000 \times \frac{30}{360} \times \frac{20}{100} = 7,500$

Policy A $= 4,70,000 \times \frac{40}{360} \times \frac{20}{100} = 10,444$

Policy B $= 4,82,000 \times \frac{50}{360} \times \frac{20}{100} = 13,389$

Policy C $= 5,00,000 \times \frac{60}{360} \times \frac{20}{100} = 16,667$

Policy D $= 5,10,000 \times \frac{75}{360} \times \frac{20}{100} = 21,250$

B. Another method of solving the problem is Incremental Approach. Here we assume that sales are all credit sales.

Particulars	*Present Policy 30 days*	*Proposed Policy A 40 days*	*Proposed Policy B 50 days*	*Proposed Policy C 60 days*	*Proposed Policy D 75 days*
	₹	₹	₹	₹	₹
A. Incremental Expected Profit:					
(a) Incremental Credit Sales		30,000	48,000	75,000	90,000
(b) Incremental Costs					
(i) Variable Costs	4,00,000	20,000	32,000	50,000	60,000
(ii) Fixed Costs	50,000	-	-	-	-
(c) Incremental Bad Debt Losses	6,000	3,450	6,960	14,250	21,600
(d) Incremental Expected Profit (a – b –c)]		6,550	9,040	10,750	8,400

B. Required Return on Incremental Investments:					
(a) Cost of Credit Sales	4,50,000	4,70,000	4,82,000	5,00,000	5,10,000
(b) Collection period	30	40	50	60	75
(c) Investment in Receivable (a x b/360)	37,500	52,222	66,944	83,333	1,06,250
(d) Incremental Investment in Receivables	-	14,722	29,444	45,833	68,750
(e) Required Rate of Return (in %)		20	20	20	20
(f) Required Return on Incremental Investments (d x e)	-	2,944	5,889	9,167	13,750
C. Net Benefits (A – B)	-	3,606	3,151	1,583	5,350

Recommendation: The Proposed Policy A should be adopted since the net benefits under this policy are higher than those under other policies.

C. Another method of solving the problem is by computing the Expected Rate of Return.

$$\text{Expected Rate of Return} = \frac{\text{Incremental Expected Profit}}{\text{Incremental Investment in Receivables}} \times 100$$

$$\text{For Policy A} = \frac{₹\,6,550}{₹\,14,722} \times 100 = 44.49\%$$

$$\text{For Policy B} = \frac{₹\,9,040}{₹\,29,444} \times 100 = 30.70\%$$

$$\text{For Policy C} = \frac{₹\,10,750}{₹\,45,833} \times 100 = 23.45\%$$

$$\text{For Policy D} = \frac{₹\,8,400}{₹\,68,750} \times 100 = 12.22\%$$

Recommendation: The Proposed Policy A should be adopted since the Expected Rate of Return (44.49%) is more than the Required Rate of Return (20%) and is highest among the given policies compared.

Illustration 23 : *XYZ Corporation is considering relaxing its present credit policy and is in the process of evaluating two proposed policies. Currently, the firm has annual credit sales of ₹ 50 lakhs and accounts receivable turnover ratio of 4 times a year. The current level of loss due to bad debts is ₹ 1,50,000. The firm is required to give a return of 25% on the investment*

in new accounts receivables. The company's variable costs are 70% of the selling price. Given the following information, which is the better option?

(Amount in ₹)

	Present Policy	*Policy Option I*	*Policy Option I*
Annual credit sales	50,00,000	60,00,000	67,50,000
Accounts receivable turnover ratio	4 times	3 times	2.4 times
Bad debt losses	1,50,000	3,00,000	4,50,000

Solution

Statement showing the Evaluation of Debtors Policies

	Particulars	*Present Policy*	*Proposed Policy I*	*Proposed Policy II*
		₹	₹	₹
A	Expected Profit:			
	(a) Credit Sales	50,00,000	60,00,000	67,50,000
	(b) Total Cost other than Bad Debts:			
	(i) Variable Costs	35,00,000	42,00,000	47,25,000
	(c) Bad Debts	1,50,000	3,00,000	4,50,000
	(d) Expected Profit [(a) – (b) – (c)]	13,50,000	15,00,000	15,75,000
B	Opportunity Cost of Investments in Receivables	2,18,750	3,50,000	4,92,188
C	Net Benefits (A – B)	11,31,250	11,50,000	10,82,812

Recommendation: The Proposed Policy I should be adopted since the net benefits under this policy are higher as compared to other policies.

Working Note: Calculation of Opportunity Cost of Average Investments

$$\text{Opportunity Cost} = \text{Total Cost} \times \frac{\text{Collection period}}{12} \times \frac{\text{Rate of Return}}{100}$$

Present Policy = ₹ 35,00,000 x 3/12 x 25% = ₹ 2,18,750

Proposed Policy I = ₹ 42,00,000 x 4/12 x 25% = ₹ 3,50,000

Proposed Policy II = ₹ 47,25,000 x 5/12 x 25% = ₹ 4,92,188

Illustration 24:

PQR Ltd. having an annual sales of ₹ 30 lakhs, is re-considering its present collection policy. At present, the average collection period is 50 days and the bad debt losses are 5% of sales. The company is incurring an expenditure of ₹ 30,000 on account of collection of receivables. Cost of funds is 10 percent.

The alternative policies are as under:

	Alternative I	*Alternative II*
Average Collection Period	*40 days*	*30 days*
Bad Debt Losses	*4% of sales*	*3% of sales*
Collection Expenses	*₹ 60,000*	*₹ 95,000*

Evaluate the alternatives on the basis of incremental approach and state which alternative is more beneficial.

Solution

Evaluation of Alternative Collection Programmes

	Present Policy	*Alternative I*	*Alternative II*
	₹	*₹*	*₹*
Sales Revenues	30,00,000	30,00,000	30,00,000
Average Collection Period (ACP) (days)	50	40	30
Receivables (₹) $\left(\text{Sales} \times \frac{\text{ACP}}{360}\right)$	4,16,667	3,33,333	2,50,000
Reduction in Receivables from Present Level (₹)	–	83,334	1,66,667
Savings in Interest @ 10% p.a. (A)	–	₹ 8,333	₹ 16,667
% of Bad Debt Loss	5%	4%	3%
Amount (₹)	1,50,000	1,20,000	90,000
Reduction in Bad Debts from Present Level (B)	–	30,000	60,000
Incremental Benefits from Present Level (C) = (A) + (B)	–	38,333	76,667
Collection Expenses (₹)	30,000	60,000	95,000
Incremental Collection Expenses from Present Level (D)	–	30,000	65,000
Incremental Net Benefit (C – D)	–	₹ 8,333	₹ 11,667

Conclusion: From the analysis it is apparent that Alternative I has a benefit of ₹ 8,333 and Alternative II has a benefit of ₹ 11,667 over present level. Alternative II has a benefit of ₹ 3,334 more than Alternative I. Hence Alternative II is more viable.

(Note: In absence of Cost of Sales, sales has been taken for purpose of calculating investment in receivables. 1 year = 360 days.)

Illustration 25 *: As a part of the strategy to increase sales and profits, the sales manager of a company proposes to sell goods to a group of new customers with 10% risk of non-payment. This group would require one and a half months credit and is likely to increase sales by ₹ 1,00,000 p.a. Production and Selling expenses amount to 80% of sales and the income-tax rate is 50%. The company's minimum required rate of return (after tax) is 25%.*

Should the sales manager's proposal be accepted?

Also find the degree of risk of non-payment that the company should be willing to assume if the required rate of return (after tax) were (i) 30%, (ii) 40% and (iii) 60%.

Solution

Statement showing the Evaluation of Proposal

Particulars	₹
A. Expected Profit:	
Net Sales	1,00,000
Less: Production and Selling Expenses @ 80%	80,000
Profit before providing for Bad Debts	20,000
Less: Bad Debts @10%	10,000
Profit before Tax	10,000
Less: Tax @ 50%	5,000
Profit after Tax	5,000
B. Opportunity Cost of Investment in Receivables	2,500
C. Net Benefits (A – B)	2,500

Advise: The sales manager's proposal should be accepted.

Working Note: Calculation of Opportunity Cost of Funds

$$\text{Opportunity Cost} = \text{Total Cost of Credit Sales} \times \frac{\text{Collection period}}{12} \times \frac{\text{Required Rate of Return}}{100}$$

$$= ₹\ 80{,}000 \times \frac{1.5}{12} \times \frac{25}{100} = ₹\ 2{,}500$$

Statement showing the Acceptable Degree of Risk of Non-payment

Particulars	*Required Rate of Return*		
	30%	*40%*	*60%*
Sales	1,00,000	1,00,000	1,00,000
Less: Production and Sales Expenses	80,000	80,000	80,000

Profit before providing for Bad Debts	20,000	20,000	20,000
Less: Bad Debts (assume X)	X	X	X
Profit before tax	20,000 – X	20,000 – X	20,000 – X
Less: Tax @ 50%	(20,000 – X) 0.5	(20,000 – X) 0.5	(20,000 – X) 0.5
Profit after Tax	10,000 –0.5X	10,000 –0.5X	10,000 –0.5X
Required Return (given)	30% of 10,000*	40% of 10,000*	60% of 10,000*
	= ₹ 3,000	= ₹ 4,000	= ₹ 6,000

*Average Debtors = Total Cost of Credit Sales x $\frac{\text{Collection period}}{12}$

= ₹ 80,000 x $\frac{1.5}{12}$ = ₹ 10,000

Computation of the value and percentage of X in each case is as follows:

Case I	10,000 – 0.5x	= 3,000
	0.5x	= 7,000
	X	= 7,000/0.5 = ₹ 14,000
Bad Debts as % of sales		= ₹ 14,000/₹1,00,000 x 100 = 14%
Case II	10,000 – 0.5x	= 4,000
	0.5x	= 6,000
	X	= 6,000/0.5 = ₹ 12,000
Bad Debts as % of sales		= ₹ 12,000/₹1,00,000 x 100 = 12%
Case III	10,000 – 0.5x	= 6,000
	0.5x	= 4,000
	X	= 4,000/0.5 = ₹ 8,000
Bad Debts as % of sales		= ₹ 8,000/₹1,00,000 x 100 = 8%

Thus, it is found that the Acceptable Degree of risk of non-payment is 14%, 12% and 8% if required rate of return (after tax) is 30%, 40% and 60% respectively.

Illustration 26 : *Slow Payers are regular customers of Goods Dealers Ltd., Calcutta and have approached the sellers for extension of a credit facility for enabling them to purchase goods from Goods Dealers Ltd. On an analysis of past performance and on the basis of information supplied, the following pattern of payment schedule emerges in regard to Slow Payers:*

	Pattern of Payment Schedule
At the end of 30 days	*15% of the bill*
At the end of 60 days	*34% of the bill.*

At the end of 90 days	*30% of the bill.*
At the end of 100 days	*20% of the bill.*
Non-recovery	*1% of the bill.*

Slow Payers want to enter into a firm commitment for purchase of goods of ₹ 15 lakhs in 2013, deliveries to be made in equal quantities on the first day of each quarter in the calendar year. The price per unit of commodity is ₹ 150 on which a profit of ₹ 5 per unit is expected to be made. It is anticipated by Goods Dealers Ltd., that taking up of this contract would mean an extra recurring expenditure of ₹ 5,000 per annum. If the opportunity cost of funds in the hands of Goods Dealers is 24% per annum, would you as the finance manager of the seller recommend the grant of credit to Slow Payers? Workings should form part of your answer. Assume year of 360 days.

Solution

Statement showing the Evaluation of Debtors Policies

Particulars	*Proposed Policy ₹*
A. Expected Profit:	
(a) Credit Sales	15,00,000
(b) Total Cost	
(i) Variable Costs	14,50,000
(ii) Recurring Costs	5,000
	14,55,000
(c) Bad Debts	15,000
(d) Expected Profit [(a) – (b) – (c)]	30,000
B. Opportunity Cost of Investments in Receivables	68,787
C. Net Benefits (A – B)	(38,787)

Recommendation: The Proposed Policy should not be adopted since the net benefits under this policy are negative

Working Note: Calculation of Opportunity Cost of Average Investments

$$\text{Opportunity Cost} = \text{Total Cost} \times \frac{\text{Collection period}}{365} \times \frac{\text{Rate of Return}}{100}$$

Particulars	15%	34%	30%	20%	Total
A. Total Cost	2,18,250	4,94,700	4,36,500	2,91,000	14,40,450
B. Collection period	30/365	60/365	90/365	100/365	

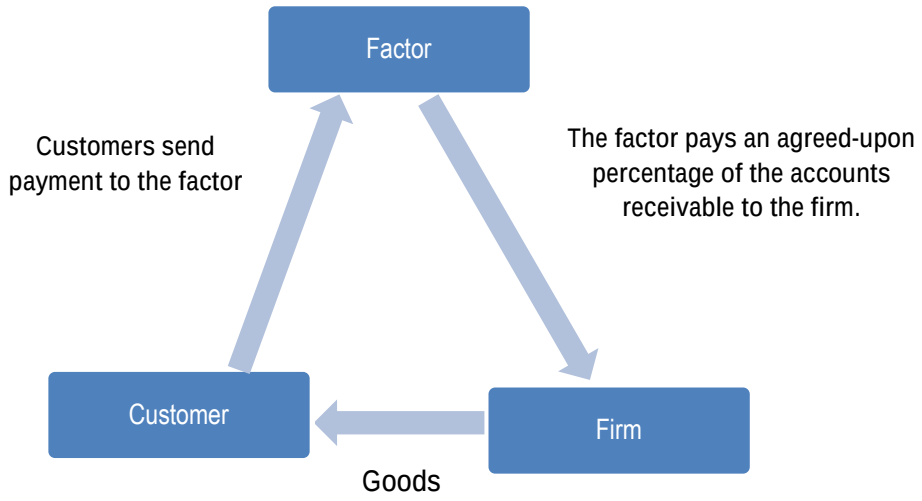
C.	Required Rate of Return	24%	24%	24%	24%	
D.	Opportunity Cost (A x B x C)	4,305	19,517	25,831	19,134	68,787

7.20 Financing Receivables

Pledging of accounts receivables and Factoring have emerged as the important sources of financing of accounts receivables now-a-days.

(i) Pledging: This refers to the use of a firm's receivable to secure a short term loan. A firm's receivables can be termed as its most liquid assets and this serve as prime collateral for a secured loan. The lender scrutinizes the quality of the accounts receivables, selects acceptable accounts, creates a lien on the collateral and fixes the percentage of financing receivables which ranges around 50 to 90%. The major advantage of pledging accounts receivables is the ease and flexibility it provides to the borrower. Moreover, financing is done regularly. This, however, suffers on account of high cost of financing.

(ii) Factoring: Factoring is a new concept in financing of accounts receivables. This refers to outright sale of accounts receivables to a factor or a financial agency. A factor is a firm that acquires the receivables of other firms. The factoring lays down the conditions of the sale in a factoring agreement. The factoring agency bears the right of collection and services the accounts for a fee.



Normally, factoring is the arrangement on a non-recourse basis where in the event of default the loss is borne by this factor. However, in a factoring arrangement with recourse, in such situation, the accounts receivables will be turned back to the firm by the factor for resolution.

There are a number of financial distributors providing factoring services in India. Some commercial banks and other financial agencies provide this service. The biggest advantages of factoring are the immediate conversion of receivables into cash and predicted pattern of cash flows. Financing receivables with the help of factoring can help a company having liquidity without creating a net liability on its financial condition. Besides, factoring is a flexible financial tool providing timely funds, efficient record keepings and effective management of the collection process. This is not considered to be as a loan. There is no debt repayment, no compromise to balance sheet, no long term agreements or delays associated with other methods of raising capital. Factoring allows the firm to use cash for the growth needs of business.

Illustration 27: *A Factoring firm has credit sales of ₹ 360 lakhs and its average collection period is 30 days. The financial controller estimates, bad debt losses are around 2% of credit sales. The firm spends ₹ 1,40,000 annually on debtors administration. This cost comprises of telephonic and fax bills along with salaries of staff members. These are the avoidable costs. A Factoring firm has offered to buy the firm's receivables. The factor will charge 1% commission and will pay an advance against receivables on an interest @15% p.a. after withholding 10% as reserve. What should the firm do?*

Assume 360 days in a year.

Solution

Average level of receivables = ₹ 360 lakhs × $\frac{30}{360}$ = 30 lakhs

Factoring Commission = 1% of ₹ 30,00,000	=	₹ 30,000
Reserve = 10% of ₹ 30,00,000	=	₹ 3,00,000
Total (i)	=	₹ 3,30,000
Thus, the amount available for advance is		
Average level of receivables		₹ 30,00,000
Less: Total (i) from above		₹ 3,30,000
(ii)		₹ 26,70,000
Less: Interest @ 15% p.a. for 30 days		₹ 33,375
Net Amount of Advance available.		₹ 26,36,625

Evaluation of Factoring Proposal

Cost to the Firm

Factoring Commission = ₹ 30,00,000 × $\frac{360}{30}$ =	₹ 3,60,000

Interest charges = ₹ 33,375 × $\frac{360}{30}$ = ₹ 4,00,500

₹ 7,60,500

Savings to the firm

	₹
Cost of credit administration	1,40,000
Cost of bad-debt losses, 0.02 × 360 lakhs	7,20,000
	8,60,000

∴ The Net benefit to the firm

	₹
Savings to the firm	8,60,000
- Cost to the firm	7,60,500
Net Savings	99,500

Conclusion: Since the savings to the firm exceeds the cost to the firm on account of factoring, therefore, the proposal is acceptable.

7.21 Innovations in Receivable Management

During the recent years, a number of tools, techniques, practices and measures have been invented to increase effectiveness in accounts receivable management.

Following are the major determinants for significant innovations in accounts receivable management and process efficiency.

1. Re-engineering Receivable Process: In some of the organizations real cost reductions and performance improvements have been achieved by re-engineering in accounts receivable process. Re-engineering is a fundamental re-think and re-design of business processes by incorporating modern business approaches. The nature of accounts receivables is such that decisions made elsewhere in the organization are likely to affect the level of resources that are expended on the management of accounts receivables.

   The following aspects provide an opportunity to improve the management of accounts receivables:

   (a) Centralisation: Centralisation of high nature transactions of accounts receivables and payable is one of the practice for better efficiency. This focuses attention on specialized groups for speedy recovery.

   (b) Alternative Payment Strategies: Alternative payment strategies in addition to traditional practices result into efficiencies in the management of accounts receivables. It is observed that payment of accounts outstanding is likely to be quicker where a number of payment alternatives are made available to customers. Besides, this convenient payment method is a marketing tool that is of benefit in attracting and retaining customers. The following alternative modes of payment

may also be used alongwith traditional methods like Cheque Book etc., for making timely payment, added customer service, reducing remittance processing costs and improved cash flows and better debtor turnover.

(i) *Direct debit:* I.e., authorization for the transfer of funds from the purchaser's bank account.

(ii) *Integrated Voice Response*: This system uses human operators and a computer based system to allow customers to make payment over phone, generally by credit card. This system has proved to be beneficial in the orgnisations processing a large number of payments regularly.

(iii) *Collection by a third party*: The payment can be collected by an authorized external firm. The payments can be made by cash, cheque, credit card or Electronic fund transfer. Banks may also be acting as collecting agents of their customers and directly depositing the collections in customers' bank accounts.

(iv) *Lock Box Processing:* Under this system an outsourced partner captures cheques and invoice data and transmits the file to the client firm for processing in that firm's systems.

(v) Payments via Internet.

(c) Customer Orientation: Where individual customers or a group of customers have some strategic importance to the firm a case study approach may be followed to develop good customer relations. A critical study of this group may lead to formation of a strategy for prompt settlement of debt.

2. Evaluation of Risk: Risk evaluation is a major component in the establishment of an effective control mechanism. Once risks have been properly assessed controls can be introduced to either contain the risk to an acceptable level or to eliminate them entirely. This also provides an opportunity for removing inefficient practices. This involves a re-think of processes and questioning the way that tasks are performed. This also opens the way for efficiency and effectiveness benefits in the management of accounts receivables.

3. Use of Latest Technology: Technological developments now-a-days provides an opportunity for improvement in accounts receivables process. The major innovations available are the integration of systems used in the management of accounts receivables, the automation and the use of e-commerce.

(a) E-commerce refers to the use of computer and electronic telecommunication technologies, particularly on an inter-organisational level, to support trading in goods and services. It uses technologies such as Electronic Data Inter-change (EDI), Electronic Mail, Electronic Funds Transfer (EFT) and Electronic Catalogue Systems to allow the buyer and seller to transact business by exchange of information between computer application systems.

(b) Automated Accounts Receivable Management Systems: Now-a-days all the big companies develop and maintain automated receivable management systems. Manual systems of recording the transactions and managing receivables are not only cumbersome but ultimately costly also. These integrated systems automatically update all the accounting records affected by a transaction. For example, if a transaction of credit sale is to be recorded, the system increases the amount the customer owes to the firm, reduces the inventory for the item purchased, and records the sale. This system of a company allows the application and tracking of receivables and collections, using the automated receivables system allows the company to store important information for an unlimited number of customers and transactions, and accommodate efficient processing of customer payments and adjustments.

4. Receivable Collection Practices: The aim of debtors' collection should be to reduce, monitor and control the accounts receivable at the same time maintain customer goodwill. The fundamental rule of sound receivable management should be to reduce the time lag between the sale and collection. Any delays that lengthen this span causes receivables to unnecessary build up and increase the risk of bad debts. This is equally true for the delays caused by billing and collection procedures as it is for delays caused by the customer.

   The following are major receivable collection procedures and practices:

   (i) Issue of Invoice.

   (ii) Open account or open-end credit.

   (iii) Credit terms or time limits.

   (iv) Periodic statements.

   (v) Use of payment incentives and penalties.

   (vi) Record keeping and Continuous Audit.

   (vii) Export Factoring: Factors provide comprehensive credit management, loss protection collection services and provision of working capital to the firms exporting internationally.

   (viii) Business Process Outsourcing: This refers to a strategic business tool whereby an outside agency takes over the entire responsibility for managing a business process.

5. Use of Financial tools/techniques: The finance manager while managing accounts receivables uses a number of financial tools and techniques. Some of them have been described hereby as follows:

   (i) Credit analysis: While determining the credit terms, the firm has to evaluate individual customers in respect of their credit worthiness and the possibility of bad debts. For this purpose, the firm has to ascertain credit rating of prospective customers.

Credit rating: An important task for the finance manager is to rate the various debtors who seek credit facility. This involves decisions regarding individual parties so as to ascertain how much credit can be extended and for how long. In foreign countries specialized agencies are engaged in the task of providing rating information regarding individual parties. Dun and Broadstreet is one such source.

The finance manager has to look into the credit-worthiness of a party and sanction credit limit only after he is convinced that the party is sound. This would involve an analysis of the financial status of the party, its reputation and previous record of meeting commitments.

The credit manager here has to employ a number of sources to obtain credit information. The following are the important sources:

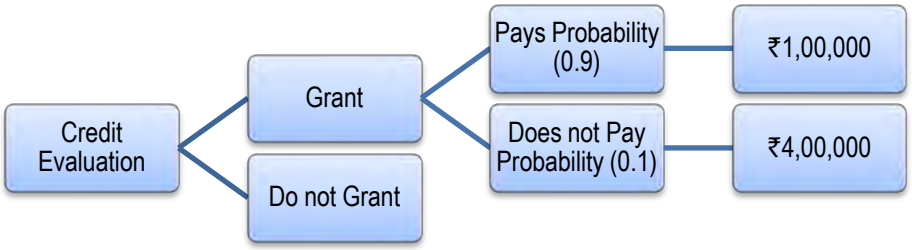
Trade references; Bank references; Credit bureau reports; Past experience; Published financial statements; and Salesman's interview and reports.

Once the credit-worthiness of a client is ascertained, the next question is to set a limit of the credit. In all such enquiries, the credit manager must be discreet and should always have the interest of high sales in view.

(ii) Decision tree analysis of granting credit: The decision whether to grant credit or not is a decision involving costs and benefits. When a customer pays, the seller makes profit but when he fails to pay the amount of cost going into the product is also gone. If the relative chances of recovering the dues can be decided it can form a probability distribution of payment or non-payment. If the chances of recovery are 9 out of 10 then probability of recovery is 0.9 and that of default is 0.1.

Credit evaluation of a customer shows that the probability of recovery is 0.9 and that of default is 0.1. the revenue from the order is ₹ 5 lakhs and cost is ₹ 4 lakhs. The decision is whether credit should be granted or not.

The analysis is presented in the following diagram.



The weighted net benefit is ₹ [1,00,000 × 0.9 i.e. 90,000 – 0.1 × 4,00,000 i.e. 40,000] = 50,000. So credit should be granted.

(iii) Control of receivables: Another aspect of management of debtors is the control of receivables. Merely setting of standards and framing a credit policy is not sufficient; it is, equally important to control receivables.

(iv) Collection policy: Efficient and timely collection of debtors ensures that the bad debt losses are reduced to the minimum and the average collection period is shorter. If a firm spends more resources on collection of debts, it is likely to have smaller bad debts. Thus, a firm must work out the optimum amount that it should spend on collection of debtors. This involves a trade-off between the level of expenditure on the one hand and decrease in bad debt losses and investment in debtors on the other.

The collection cell of a firm has to work in a manner that it does not create too much resentment amongst the customers. On the other hand, it has to keep the amount of the outstanding in check. Hence, it has to work in a very smoothen manner and diplomatically.

It is important that clear-cut procedures regarding credit collection are set up. Such procedures must answer questions like the following:

(a) How long should a debtor balance be allowed to exist before collection process is started?

(b) What should be the procedure of follow up with defaulting customer? How reminders are to be sent and how should each successive reminder be drafted?

(c) Should there be collection machinery whereby personal calls by company's representatives are made?

(d) What should be the procedure for dealing with doubtful accounts? Is legal action to be instituted? How should account be handled?

7.22 Monitoring of Receivables

(i) Computation of average age of receivables: It involves computation of average collection period.

(ii) Ageing Schedule: When receivables are analysed according to their age, the process is known as preparing the ageing schedules of receivables. The computation of average age of receivables is a quick and effective method of comparing the liquidity of receivables with the liquidity of receivables in the past and also comparing liquidity of one firm with the liquidity of the other competitive firm. It also helps the firm to predict collection pattern of receivables in future. This comparison can be made periodically. The purpose of classifying receivables by age groups is to have a closer control over the quality of individual accounts. It requires going back to the receivables ledger where the dates of each customer's purchases and payments are available. The ageing schedule, by indicating a tendency for old accounts to accumulate, provides a useful supplement to average collection period of receivables/sales analysis. Because an analysis of receivables in terms of associated dates of sales enables the firm to recognise the recent increases, and slumps in sales. To ascertain the condition of receivables for control purposes, it may be

considered desirable to compare the current ageing schedule with an earlier ageing schedule in the same firm and also to compare this information with the experience of other firms. The following is an illustration of the ageing schedule of receivables:-

Ageing Schedule

Age Classes (Days)	As on 30th June, 2014			As on 30th September, 2014		
	Month of Sale	*Balance of Receivables*	*Percentage to total*	*Month of Sale*	*Balance of Receivables*	*Percentage to total*
		(₹)			*(₹)*	
1-30	June	41,500	11.9	September	1,00,000	22.7
31-60	May	74,200	21.4	August	2,50,000	56.8
61-90	April	1,85,600	53.4	July	48,000	10.9
91-120	March	35,300	10.2	June	40,000	9.1
121 and more	Earlier	10,800	3.1	Earlier	2,000	0.5
		3,47,400	100		4,40,000	100

The above ageing schedule shows a substantial improvement in the liquidity of receivables for the quarter ending September, 2014 as compared with the liquidity of receivables for the quarter ending June, 2014. It could be possible due to greater collection efforts of the firm.

(iii) Collection Programme:

(a) Monitoring the state of receivables.

(b) Intimation to customers when due date approaches.

(c) Telegraphic and telephonic advice to customers on the due date.

(d) Threat of legal action on overdue A/cs.

(e) Legal action on overdue A/cs.

The following diagram shows the relationship between collection expenses and bad debt losses which have to be established as initial increase in collection expenses may have only a small impact on bad debt losses.

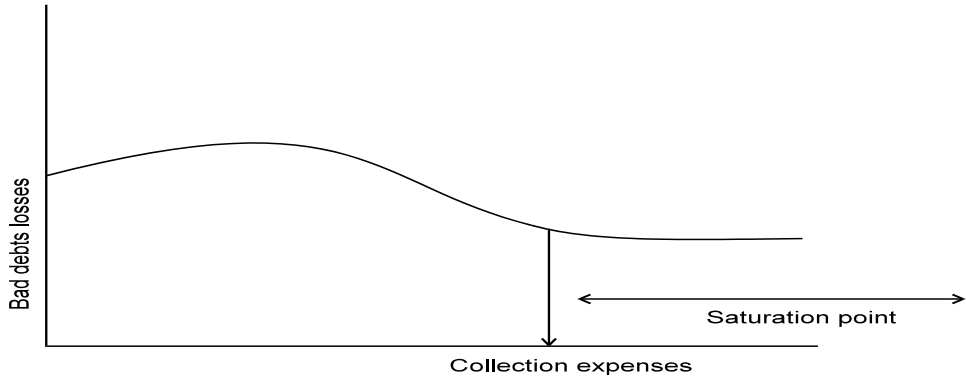


Illustration 27 : *Mosaic Limited has current sales of ₹ 15 lakhs per year. Cost of sales is 75 per cent of sales and bad debts are one per cent of sales. Cost of sales comprises 80 per cent variable costs and 20 per cent fixed costs, while the company's required rate of return is 12 per cent. Mosaic Limited currently allows customers 30 days' credit, but is considering increasing this to 60 days' credit in order to increase sales.*

It has been estimated that this change in policy will increase sales by 15 per cent, while bad debts will increase from one per cent to four per cent. It is not expected that the policy change will result in an increase in fixed costs and creditors and stock will be unchanged.

Should Mosaic Limited introduce the proposed policy?

Solution

New level of sales will be 15,00,000×1.15 = ₹ 17,25,000

Variable costs are 80% ×75% = 60% of sales

Contribution from sales is therefore 40% of sales

	₹	₹
Proposed investment in debtors = 17,25,000×60/365 =		2,83,562
Current investment in debtors = 15,00,000×30/365		1,23,288
Increase in investment in debtors		1,60,274
Increase in contribution = 15% ×15,00,000×40% =		90,000
New level of bad debts = 17,25,000×4% =	69,000	
Current level of bad debts	15,000	
Increase in bad debts		(54,000)
Additional financing costs = 1,60,274×12% =		(19,233)
Savings by introducing change in policy		16,767

Advise: The financing policy is financially acceptable, although the savings are not great.

Illustration 28: *Misha Limited presently gives terms of net 30 days. It has ₹ 6 crores in sales, and its average collection period is 45 days. To stimulate demand, the company may give terms of net 60 days. If it does instigate these terms, sales are expected to increase by 15 per cent. After the change, the average collection period is expected to be 75 days, with no difference in payment habits between old and new customers. Variable costs are ₹ 0.80 for every ₹ 1.00 of sales, and the company's required rate of return on investment in receivables is 20 per cent. Should the company extend its credit period? (Assume a 360 days year).*

Solution

Receivable turnover = $\frac{360}{75} = 4.8$

Profitability of additional sales = ₹ 90,00,000 × 0.2 = ₹ 18,00,000.

Additional receivables associated with the new sales = $\frac{₹\ 90,00,000}{4.8} = ₹\ 18,75,000$

Additional investment in receivables associated with the new sales

= ₹ 18,75,000 × 0.8 = ₹ 15,00,000

New level of receivables associated with the original sales

$= \frac{₹\ 6,00,00,000}{4.8} = ₹\ 1,25,00,000$

Old level of receivables associated with the original sales

$= \frac{₹\ 6,00,00,000}{8} = ₹\ 75,00,000$

Incremental receivable investment, original sales = ₹ 50,00,000.

Total increase in receivable investment = ₹ 15,00,000 + ₹ 50,00,000= ₹ 65,00,000.

Carrying cost of additional investment = .20 × ₹ 65,00,000 = ₹ 13,00,000.

Advise : As the incremental carrying cost is less than the incremental profitability, the company should lengthen its credit period from 30 to 60 days.

Illustration 29: *The Megatherm Corporation has just acquired a large account. As a result, it needs an additional ₹ 75,000 in working capital immediately. It has been determined that there are three feasible sources of funds:*

(a) Trade credit: The company buys about ₹ 50,000 of materials per month on terms of 3/30, net 90. Discounts are taken.

(b) Bank loan: The firm's bank will lend ₹ 1,00,000 at 13 per cent. A 10 per cent compensating balance will be required, which otherwise would not be maintained by the company.

(c) A factor will buy the company's receivables (₹ 1,00,000 per month), which have a collection period of 60 days. The factor will advance up to 75 per cent of the face value of the receivables at 12 per cent on an annual basis. The factor will also charge a 2 per cent fee on all receivables purchased. It has been estimated that the factor's services will save the company a credit department expense and bad-debt expenses of ₹ 1,500 per month.

On the basis of annual percentage cost, which alternative should the company select?

Solution

(a) *Cost of trade credit*: If discounts are not taken, upto ₹ 97,000 can be raised after the second month. The real cost of not taking advantage of the discount would be

$$\frac{3}{97} \times \frac{365}{60} = 18.81\%$$

(b) *Cost of bank loan*: Assuming the compensating balance would not otherwise be maintained, the real cost of not taking advantage of the discount would be

$$\frac{13}{90} = 14.44\%$$

(c) *Cost of factoring*: The factor fee for the year would be

$$2\% \times ₹\ 12,00,000 = ₹\ 24,000$$

The savings effected, however, would be ₹ 18,000, giving a net factoring cost of ₹ 6,000. Borrowing ₹ 75,000 on the receivables would thus cost

$$\frac{(12\%)\ (₹\ 75,000)\ +\ ₹\ 6,000}{₹\ 75,000} = \frac{₹\ 9,000\ +\ ₹\ 6,000}{₹\ 75,000} = 20.00\%$$

Advise: Bank borrowing would be the cheapest source of funds.

Illustration 30: *The Dolce Company purchases raw materials on terms of 2/10, net 30. A review of the company's records by the owner, Mr. Gupta, revealed that payments are usually made 15 days after purchases are received. When asked why the firm did not take advantage of its discounts, the accountant, Mr. Ram, replied that it cost only 2 per cent for these funds, whereas a bank loan would cost the company 12 per cent.*

(a) What mistake is Ram making?

(b) What is the real cost of not taking advantage of the discount?

(c) If the firm could not borrow from the bank and was forced to resort to the use of trade credit funds, what suggestion might be made to Ram that would reduce the annual interest cost?

Solution

(a) Ram is confusing the percentage cost of using funds for 5 days with the cost of using funds for a year. These costs are clearly not comparable. One must be converted to the time scale of the other.

(b) $\frac{2}{98} \times \frac{365}{5} = 149.0\%$

(c) Assuming that the firm has made the decision not to take the cash discount, it makes no sense to pay before the due date. In this case, payment 30 days after purchases are received rather than 15 would reduce the annual interest cost to 37.2 per cent.

UNIT – V : MANAGEMENT OF PAYABLES (CREDITORS)

7.23 Introduction

There is an old age saying in business that if you can buy well then you can sell well. Management of your creditors and suppliers is just as important as the management of your debtors.

Trade creditor is a spontaneous source of finance in the sense that it arises from ordinary business transaction. But it is also important to look after your creditors - slow payment by you may create ill-feeling and your supplies could be disrupted and also create a bad image for your company.

Creditors are a vital part of effective cash management and should be managed carefully to enhance the cash position.

7.24 Cost and Benefits of Trade Credit

(a) Cost of Availing Trade Credit

Normally it is considered that the trade credit does not carry any cost. However, it carries the following costs:

(i) Price: There is often a discount on the price that the firm undergoes when it uses trade credit, since it can take advantage of the discount only if it pays immediately. This discount can translate into a high implicit cost.

(ii) Loss of goodwill: If the credit is overstepped, suppliers may discriminate against delinquent customers if supplies become short. As with the effect of any loss of goodwill, it depends very much on the relative market strengths of the parties involved.

(iii) Cost of managing: Management of creditors involves administrative and accounting costs that would otherwise be incurred.

(iv) Conditions: Sometimes most of the suppliers insist that for availing the credit facility the order should be of some minimum size or even on regular basis.

(b) Cost of Not Taking Trade Credit

On the other hand the costs of not availing credit facilities are as under:

(i) Impact of Inflation: If inflation persists then the borrowers are favoured over the lenders with the levels of interest rates not seeming totally to redress the balance.

(ii) Interest: Trade credit is a type of interest free loan, therefore failure to avail this facility has an interest cost. This cost is further increased if interest rates are higher.

(iii) Inconvenience: Sometimes it may also cause inconvenience to the supplier if the supplier is geared to the deferred payment.

7.25 Computation of Cost of Payables

By using the trade credit judiciously, a firm can reduce the effect of growth or burden on investments in Working Capital.

Now question arises how to calculate the cost of not taking the discount.

The following equation can be used to calculate nominal cost, on an annual basis of not taking the discount:

$$\frac{d}{100-d}\times\frac{365\,\text{days}}{t}$$

However the above formula does not take into account the compounding effect and therefore, the cost of credit shall be even higher. The cost of lost cash discount can be estimated by the formula:

$$\left(\frac{100}{100-d}\right)^{\frac{365}{t}}-1$$

Where,

d = Size of discount i.e. for 6% discount, d=6

t = The reduction in the payment period in days, necessary to obtain the early discount or Days Credit Outstanding – Discount Period.

Illustration 31: *Suppose ABC Ltd. has been offered credit terms from its major supplier of 2/10, net 45. Hence the company has the choice of paying ₹ 10 per ₹ 100 or to invest ₹ 98 for an additional 35 days and eventually pay the supplier ₹ 100 per ₹ 100. The decision as to whether the discount should be accepted depends on the opportunity cost of investing ₹ 98 for 35 days. What should the company do?*

Solution

If the company does not avail the cash discount and pays the amount after 45 days, the implied cost of interest per annum would be approximately:

$$\left(\frac{100}{100-2}\right)^{\frac{365}{35}}-1=23.5\%$$

Now let us assume that ABC Ltd. can invest the additional cash and can obtain an annual return of 25% and if the amount of invoice is ₹ 10,000. The alternatives are as follows:

	Refuse discount	Accept discount
	₹	₹
Payment to supplier	10,000	9,800
Return from investing ₹ 9,800 between day 10 and day 45: $\frac{35}{365} \times$ ₹ 9,800 $\times$ 25%	(235)	
Net Cost	9,765	9,800

Advise : Thus it is better for the company to refuse the discount, as return on cash retained is more than the saving on account of discount.

UNIT – VI: FINANCING OF WORKING CAPITAL

7.26 Introduction

After determining the amount of working capital required, the next step to be taken by the finance manager is to arrange the funds.

As discussed earlier, it is advisable that the finance manager bifurcates the working capital requirements between the permanent working capital and temporary working capital.

The permanent working capital is always needed irrespective of sales fluctuations, hence should be financed by the long-term sources such as debt and equity. On the contrary the temporary working capital may be financed by the short-term sources of finance.

Broadly speaking, the working capital finance may be classified between the two categories:

(i) Spontaneous sources; and

(ii) Negotiable sources.

Spontaneous Sources: Spontaneous sources of finance are those which naturally arise in the course of business operations. Trade credit, credit from employees, credit from suppliers of services, etc. are some of the examples which may be quoted in this respect.

Negotiated Sources: On the other hand the negotiated sources, as the name implies, are those which have to be specifically negotiated with lenders say, commercial banks, financial institutions, general public etc.

The finance manager has to be very careful while selecting a particular source, or a combination thereof for financing of working capital. Generally, the following parameters will guide his decisions in this respect:

(i) Cost factor

(ii) Impact on credit rating

(iii) Feasibility

(iv) Reliability

(v) Restrictions

(vi) Hedging approach or matching approach i.e., Financing of assets with the same maturity as of assets.

7.27 Sources of Finance

7.27.1 Spontaneous Sources of Finance

(a) Trade Credit: As outlined above trade credit is a spontaneous source of finance which is normally extended to the purchaser organization by the sellers or services providers. This source of financing working capital is more important since it contributes to about one-third of the total

short-term requirements. The dependence on this source is higher due to lesser cost of finance as compared with other sources. Trade credit is guaranteed when a company acquires supplies, merchandise or materials and does not pay immediately. If a buyer is able to get the credit without completing much formality, it is termed as 'open account trade credit.'

(b) Bills Payable: On the other hand in the case of "Bills Payable" the purchaser will have to give a written promise to pay the amount of the bill/invoice either on demand or at a fixed future date to the seller or the bearer of the note.

Due to its simplicity, easy availability and lesser explicit cost, the dependence on this source is much more in all small or big organizations. Especially, for small enterprises this form of credit is more helpful to small and medium enterprises. The amount of such financing depends on the volume of purchases and the payment timing.

(c) Accrued Expenses: Another spontaneous source of short-term financing is the accrued expenses or the outstanding expenses liabilities. The accrued expenses refer to the services availed by the firm, but the payment for which has yet to be made. It is a built in and an automatic source of finance as most of the services like wages, salaries, taxes, duties etc., are paid at the end of the period. The accrued expenses represent an interest free source of finance. There is no explicit or implicit cost associated with the accrued expenses and the firm can ensure liquidity by accruing these expenses.

7.27.2Inter-corporate Loans and Deposits: Sometimes, organizations having surplus funds invest for shot-term period with other organizations. The rate of interest will be higher than the bank rate of interest and depends on the financial soundness of the borrower company. This source of finance reduces dependence on bank financing.

7.27.3Commercial Papers: Commercial Paper (CP) is an unsecured promissory note issued by a firm to raise funds for a short period. This is an instrument that enables highly rated corporate borrowers for short-term borrowings and provides an additional financial instrument to investors with a freely negotiable interest rate. The maturity period ranges from minimum 7 days to less than 1 year from the date of issue. CP can be issued in denomination of ₹ 5 lakhs or multiples thereof.

Advantages of CP: From the point of the issuing company, CP provides the following benefits:

(a) CP is sold on an unsecured basis and does not contain any restrictive conditions.

(b) Maturing CP can be repaid by selling new CP and thus can provide a continuous source of funds.

(c) Maturity of CP can be tailored to suit the requirement of the issuing firm.

(d) CP can be issued as a source of fund even when money market is tight.

(e) Generally, the cost of CP to the issuing firm is lower than the cost of commercial bank loans.

However, CP as a source of financing has its own limitations:

(i) Only highly credit rating firms can use it. New and moderately rated firm generally are not in a position to issue CP.

(ii) CP can neither be redeemed before maturity nor can be extended beyond maturity.

7.27.4Funds Generated from Operations: Funds generated from operations, during an accounting period, increase working capital by an equivalent amount. The two main components of funds generated from operations are profit and depreciation. Working capital will increase by the extent of funds generated from operations. Students may refer to funds flow statement given earlier in this chapter.

7.27.5Public Deposits: Deposits from the public are one of the important sources of finance particularly for well established big companies with huge capital base for short and medium-term.

7.27.6Bills Discounting: Bill discounting is recognized as an important short term Financial Instrument and it is widely used method of short term financing. In a process of bill discounting, the supplier of goods draws a bill of exchange with direction to the buyer to pay a certain amount of money after a certain period, and gets its acceptance from the buyer or drawee of the bill.

7.27.7Bill Rediscounting Scheme: The Bill rediscounting Scheme was introduced by Reserve Bank of India with effect from 1st November, 1970 in order to extend the use of the bill of exchange as an instrument for providing credit and the creation of a bill market in India with a facility for the rediscounting of eligible bills by banks. Under the bills rediscounting scheme, all licensed scheduled banks are eligible to offer bills of exchange to the Reserve Bank for rediscount.

7.27.8 Factoring: Students may refer to the unit on Receivable Management wherein the concept of factoring has been discussed. Factoring is a method of financing whereby a firm sells its trade debts at a discount to a financial institution. In other words, factoring is a continuous arrangement between a financial institution, (namely the factor) and a firm (namely the client) which sells goods and services to trade customers on credit. As per this arrangement, the factor purchases the client's trade debts including accounts receivables either with or without recourse to the client, and thus, exercises control over the credit extended to the customers and administers the sales ledger of his client. To put it in a layman's language, a factor is an agent who collects the dues of his client for a certain fee.

The differences between Factoring and Bills discounting are as follows:

(i) Factoring is called as 'Invoice factoring' whereas bills discounting is known as "Invoice discounting".

(ii) In factoring the parties are known as client, factor and debtor whereas in bills discounting they are known as Drawer, Drawee and Payee.

(iii) Factoring is a sort of management of book debts whereas bills discounting is a sort of borrowing from commercial banks.

(iv) For factoring there is no specific Act; whereas in the case of bills discounting, the Negotiable Instrument Act is applicable.

7.28 Working Capital Finance from Banks

Banks in India today constitute the major suppliers of working capital credit to any business activity. Recently, some term lending financial institutions have also announced schemes for working capital financing. The two committees viz., Tandon Committee and Chore Committee have evolved definite guidelines and parameters in working capital financing, which have laid the foundations for development and innovation in the area.

7.28.1 Instructions on Working Capital Finance by Banks

Assessment of Working Capital

- Reserve Bank of India has withdrawn the prescription, in regard to assessment of working capital needs, based on the concept of Maximum Permissible Bank Finance, in April 1997. Banks are now free to evolve, with the approval of their Boards, methods for assessing the working capital requirements of borrowers, within the prudential guidelines and exposure norms prescribed. Banks, however, have to take into account Reserve Bank's instructions relating to directed credit (such as priority sector, export, etc.), and prohibition of credit (such as bridge finance, rediscounting of bills earlier discounted by NBFCs) while formulating their lending policies.
- With the above liberalizations, all the instructions relating to MPBF issued by RBI from time to time stand withdrawn. Further, various instructions/guidelines issued to banks with objective of ensuring lending discipline in appraisal, sanction, monitoring and utilization of bank finance cease to be mandatory. However, banks have the option of incorporating such of the instructions/guidelines as are considered necessary in their lending policies/procedures.

7.29 Forms of Bank Credit

The bank credit will generally be in the following forms:

- Cash Credit: This facility will be given by the banker to the customers by giving certain amount of credit facility on continuous basis. The borrower will not be allowed to exceed the limits sanctioned by the bank.
- Bank Overdraft: It is a short-term borrowing facility made available to the companies in case of urgent need of funds. The banks will impose limits on the amount they can lend. When the borrowed funds are no longer required they can quickly and easily be repaid. The banks issue overdrafts with a right to call them in at short notice.

- Bills Discounting: The Company which sells goods on credit will normally draw a bill on the buyer who will accept it and sends it to the seller of goods. The seller, in turn discounts the bill with his banker. The banker will generally earmark the discounting bill limit.
- Bills Acceptance: To obtain finance under this type of arrangement a company draws a bill of exchange on bank. The bank accepts the bill thereby promising to pay out the amount of the bill at some specified future date.
- Line of Credit: Line of Credit is a commitment by a bank to lend a certain amount of funds on demand specifying the maximum amount.
- Letter of Credit: It is an arrangement by which the issuing bank on the instructions of a customer or on its own behalf undertakes to pay or accept or negotiate or authorizes another bank to do so against stipulated documents subject to compliance with specified terms and conditions.
- Bank Guarantees: Bank guarantee is one of the facilities that the commercial banks extend on behalf of their clients in favour of third parties who will be the beneficiaries of the guarantees.

SUMMARY

- Working Capital Management involves managing the balance between firm's short-term assets and its short-term liabilities.
- From the value point of view, Working Capital can be defined as Gross Working Capital or Net Working Capital.
- From the point of view of time, the term working capital can be divided into two categories viz., Permanent and temporary.
- A large amount of working capital would mean that the company has idle funds. Since funds have a cost, the company has to pay huge amount as interest on such funds. If the firm has inadequate working capital, such firm runs the risk of insolvency.
- Some of the items/factors which need to be considered while planning for working capital requirement are nature of business, market and demand conditions, operating efficiency, credit policy etc.
- Finance manager has to pay particular attention to the levels of current assets and their financing. To decide the levels and financing of current assets, the risk return trade off must be taken into account.
- In determining the optimum level of current assets, the firm should balance the profitability – Solvency tangle by minimizing total costs.
- Working Capital cycle indicates the length of time between a company's paying for materials, entering into stock and receiving the cash from sales of finished goods. It can be determined by adding the number of days required for each stage in the cycle.

- Treasury management is defined as 'the corporate handling of all financial matters, the generation of external and internal funds for business, the management of currencies and cash flows and the complex, strategies, policies and procedures of corporate finance
- The main objectives of cash management for a business are:-
  i. Provide adequate cash to each of its units;
  ii. No funds are blocked in idle cash; and
  iii. The surplus cash (if any) should be invested in order to maximize returns for the business.
- Cash Budget is the most significant device to plan for and control cash receipts and payments.

  This represents cash requirements of business during the budget period. The various purposes of cash budgets are:-
  i. Coordinate the timings of cash needs. It identifies the period(s) when there might either be shortage of cash or an abnormally large cash requirement;
  ii. It also helps to pinpoint period(s) when there is likely to be excess cash;
  iii. It enables firm which has sufficient cash to take advantage like cash discounts on its accounts payable;
  iv. Lastly it helps to plan/arrange adequately needed funds (avoiding excess/ shortage of cash) on favorable terms.
- Large amounts are tied up in sundry debtors, there are chances of bad debts and there will be cost of collection of debts. On the contrary, if the investment in sundry debtors is low, the sales may be restricted, since the competitors may offer more liberal terms. Therefore, management of sundry debtors is an important issue and requires proper policies and their implementation.
- There are basically three aspects of management of sundry debtors: Credit policy, Credit Analysis and Control of receivable
- Trade creditor is a spontaneous source of finance in the sense that it arises from ordinary business transaction. But it is also important to look after your creditors - slow payment by you may create ill-feeling and your supplies could be disrupted and also create a bad image for your company.
- Creditors are a vital part of effective cash management and should be managed carefully to enhance the cash position.
- As discussed earlier, it is advisable that the finance manager bifurcates the working capital requirements between the permanent working capital and temporary working capital.
- The permanent working capital is always needed irrespective of sales fluctuations, hence should be financed by the long-term sources such as debt and equity. On the contrary the temporary working capital may be financed by the short-term sources of finance.

APPENDIX

Future value interest factor of ₹1 per period at i% for n periods, FVIF(i,n).

(The Compound Sum of One Rupee)

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	1.010	1.020	1.030	1.040	1.050	1.060	1.070	1.080	1.090	1.100
2	1.020	1.040	1.061	1.082	1.103	1.124	1.145	1.166	1.188	1.210
3	1.030	1.061	1.093	1.125	1.158	1.191	1.225	1.260	1.295	1.331
4	1.041	1.082	1.126	1.170	1.216	1.262	1.311	1.360	1.412	1.464
5	1.051	1.104	1.159	1.217	1.276	1.338	1.403	1.469	1.539	1.611
6	1.062	1.126	1.194	1.265	1.340	1.419	1.501	1.587	1.677	1.772
7	1.072	1.149	1.230	1.316	1.407	1.504	1.606	1.714	1.828	1.949
8	1.083	1.172	1.267	1.369	1.477	1.594	1.718	1.851	1.993	2.144
9	1.094	1.195	1.305	1.423	1.551	1.689	1.838	1.999	2.172	2.358
10	1.105	1.219	1.344	1.480	1.629	1.791	1.967	2.159	2.367	2.594
11	1.116	1.243	1.384	1.539	1.710	1.898	2.105	2.332	2.580	2.853
12	1.127	1.268	1.426	1.601	1.796	2.012	2.252	2.518	2.813	3.138
13	1.138	1.294	1.469	1.665	1.886	2.133	2.410	2.720	3.066	3.452
14	1.149	1.319	1.513	1.732	1.980	2.261	2.579	2.937	3.342	3.797
15	1.161	1.346	1.558	1.801	2.079	2.397	2.759	3.172	3.642	4.177
16	1.173	1.373	1.605	1.873	2.183	2.540	2.952	3.426	3.970	4.595
17	1.184	1.400	1.653	1.948	2.292	2.693	3.159	3.700	4.328	5.054
18	1.196	1.428	1.702	2.026	2.407	2.854	3.380	3.996	4.717	5.560
19	1.208	1.457	1.754	2.107	2.527	3.026	3.617	4.316	5.142	6.116
20	1.220	1.486	1.806	2.191	2.653	3.207	3.870	4.661	5.604	6.727
25	1.282	1.641	2.094	2.666	3.386	4.292	5.427	6.848	8.623	10.835
30	1.348	1.811	2.427	3.243	4.322	5.743	7.612	10.063	13.268	17.449
35	1.417	2.000	2.814	3.946	5.516	7.686	10.677	14.785	20.414	28.102
40	1.489	2.208	3.262	4.801	7.040	10.286	14.974	21.725	31.409	45.259
50	1.645	2.692	4.384	7.107	11.467	18.420	29.457	46.902	74.358	117.391

Contd…….

Period	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	1.110	1.120	1.130	1.140	1.150	1.160	1.170	1.180	1.190	1.200
2	1.232	1.254	1.277	1.300	1.323	1.346	1.369	1.392	1.416	1.440
3	1.368	1.405	1.443	1.482	1.521	1.561	1.602	1.643	1.685	1.728
4	1.518	1.574	1.630	1.689	1.749	1.811	1.874	1.939	2.005	2.074
5	1.685	1.762	1.842	1.925	2.011	2.100	2.192	2.288	2.386	2.488
6	1.870	1.974	2.082	2.195	2.313	2.436	2.565	2.700	2.840	2.986
7	2.076	2.211	2.353	2.502	2.660	2.826	3.001	3.185	3.379	3.583
8	2.305	2.476	2.658	2.853	3.059	3.278	3.511	3.759	4.021	4.300
9	2.558	2.773	3.004	3.252	3.518	3.803	4.108	4.435	4.785	5.160
10	2.839	3.106	3.395	3.707	4.046	4.411	4.807	5.234	5.695	6.192
11	3.152	3.479	3.836	4.226	4.652	5.117	5.624	6.176	6.777	7.430
12	3.498	3.896	4.335	4.818	5.350	5.936	6.580	7.288	8.064	8.916
13	3.883	4.363	4.898	5.492	6.153	6.886	7.699	8.599	9.596	10.699
14	4.310	4.887	5.535	6.261	7.076	7.988	9.007	10.147	11.420	12.839
15	4.785	5.474	6.254	7.138	8.137	9.266	10.539	11.974	13.590	15.407
16	5.311	6.130	7.067	8.137	9.358	10.748	12.330	14.129	16.172	18.488
17	5.895	6.866	7.986	9.276	10.761	12.468	14.426	16.672	19.244	22.186
18	6.544	7.690	9.024	10.575	12.375	14.463	16.879	19.673	22.901	26.623
19	7.263	8.613	10.197	12.056	14.232	16.777	19.748	23.214	27.252	31.948
20	8.062	9.646	11.523	13.743	16.367	19.461	23.106	27.393	32.429	38.338
25	13.585	17.000	21.231	26.462	32.919	40.874	50.658	62.669	77.388	95.396
30	22.892	29.960	39.116	50.950	66.212	85.850	111.065	143.371	184.675	237.376
35	38.575	52.800	72.069	98.100	133.176	180.314	243.503	327.997	440.701	590.668
40	65.001	93.051	132.782	188.884	267.864	378.721	533.869	750.378	1,051.668	1,469.772
50	184.565	289.002	450.736	700.233	1,083.657	1,670.704	2,566.215	3,927.357	5,988.914	9,100.438

Present value interest factor of Re 1 per period at i% for n periods, PVIF(i,n).

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239
16	0.853	0.728	0.623	0.534	0.458	0.394	0.339	0.292	0.252	0.218
17	0.844	0.714	0.605	0.513	0.436	0.371	0.317	0.270	0.231	0.198
18	0.836	0.700	0.587	0.494	0.416	0.350	0.296	0.250	0.212	0.180
19	0.828	0.686	0.570	0.475	0.396	0.331	0.277	0.232	0.194	0.164
20	0.820	0.673	0.554	0.456	0.377	0.312	0.258	0.215	0.178	0.149
25	0.780	0.610	0.478	0.375	0.295	0.233	0.184	0.146	0.116	0.092
30	0.742	0.552	0.412	0.308	0.231	0.174	0.131	0.099	0.075	0.057
35	0.706	0.500	0.355	0.253	0.181	0.130	0.094	0.068	0.049	0.036
40	0.672	0.453	0.307	0.208	0.142	0.097	0.067	0.046	0.032	0.022
50	0.608	0.372	0.228	0.141	0.087	0.054	0.034	0.021	0.013	0.009

Contd….

Period	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694
3	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579
4	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482
5	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402
6	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335
7	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279
8	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233
9	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194
10	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162
11	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135
12	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112
13	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093
14	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078
15	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.074	0.065
16	0.188	0.163	0.141	0.123	0.107	0.093	0.081	0.071	0.062	0.054
17	0.170	0.146	0.125	0.108	0.093	0.080	0.069	0.060	0.052	0.045
18	0.153	0.130	0.111	0.095	0.081	0.069	0.059	0.051	0.044	0.038
19	0.138	0.116	0.098	0.083	0.070	0.060	0.051	0.043	0.037	0.031
20	0.124	0.104	0.087	0.073	0.061	0.051	0.043	0.037	0.031	0.026
25	0.074	0.059	0.047	0.038	0.030	0.024	0.020	0.016	0.013	0.010
30	0.044	0.033	0.026	0.020	0.015	0.012	0.009	0.007	0.005	0.004
35	0.026	0.019	0.014	0.010	0.008	0.006	0.004	0.003	0.002	0.002
40	0.015	0.011	0.008	0.005	0.004	0.003	0.002	0.001	0.001	0.001
50	0.005	0.003	0.002	0.001	0.001	0.001	0.000	0.000	0.000	0.000

Future value interest factor of an ordinary annuity of Re 1 per period at i% for n periods, FVIFA(i,n). (The Compound Value of an Annuity of One Rupee)

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.010	2.020	2.030	2.040	2.050	2.060	2.070	2.080	2.090	2.100
3	3.030	3.060	3.091	3.122	3.153	3.184	3.215	3.246	3.278	3.310
4	4.060	4.122	4.184	4.246	4.310	4.375	4.440	4.506	4.573	4.641
5	5.101	5.204	5.309	5.416	5.526	5.637	5.751	5.867	5.985	6.105
6	6.152	6.308	6.468	6.633	6.802	6.975	7.153	7.336	7.523	7.716
7	7.214	7.434	7.662	7.898	8.142	8.394	8.654	8.923	9.200	9.487
8	8.286	8.583	8.892	9.214	9.549	9.897	10.260	10.637	11.028	11.436
9	9.369	9.755	10.159	10.583	11.027	11.491	11.978	12.488	13.021	13.579
10	10.462	10.950	11.464	12.006	12.578	13.181	13.816	14.487	15.193	15.937
11	11.567	12.169	12.808	13.486	14.207	14.972	15.784	16.645	17.560	18.531
12	12.683	13.412	14.192	15.026	15.917	16.870	17.888	18.977	20.141	21.384
13	13.809	14.680	15.618	16.627	17.713	18.882	20.141	21.495	22.953	24.523
14	14.947	15.974	17.086	18.292	19.599	21.015	22.550	24.215	26.019	27.975
15	16.097	17.293	18.599	20.024	21.579	23.276	25.129	27.152	29.361	31.772
16	17.258	18.639	20.157	21.825	23.657	25.673	27.888	30.324	33.003	35.950
17	18.430	20.012	21.762	23.698	25.840	28.213	30.840	33.750	36.974	40.545
18	19.615	21.412	23.414	25.645	28.132	30.906	33.999	37.450	41.301	45.599
19	20.811	22.841	25.117	27.671	30.539	33.760	37.379	41.446	46.018	51.159
20	22.019	24.297	26.870	29.778	33.066	36.786	40.995	45.762	51.160	57.275
25	28.243	32.030	36.459	41.646	47.727	54.865	63.249	73.106	84.701	98.347
30	34.785	40.568	47.575	56.085	66.439	79.058	94.461	113.28	136.31	164.49
35	41.660	49.994	60.462	73.652	90.320	111.43	138.24	172.32	215.71	271.02
40	48.886	60.402	75.401	95.026	120.80	154.76	199.64	259.06	337.88	442.59
50	64.463	84.579	112.80	152.67	209.35	290.34	406.53	573.77	815.08	1,163.9

Contd….

Period	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.110	2.120	2.130	2.140	2.150	2.160	2.170	2.180	2.190	2.200
3	3.342	3.374	3.407	3.440	3.473	3.506	3.539	3.572	3.606	3.640
4	4.710	4.779	4.850	4.921	4.993	5.066	5.141	5.215	5.291	5.368
5	6.228	6.353	6.480	6.610	6.742	6.877	7.014	7.154	7.297	7.442
6	7.913	8.115	8.323	8.536	8.754	8.977	9.207	9.442	9.683	9.930
7	9.783	10.089	10.405	10.730	11.067	11.414	11.772	12.142	12.523	12.916
8	11.859	12.300	12.757	13.233	13.727	14.240	14.773	15.327	15.902	16.499
9	14.164	14.776	15.416	16.085	16.786	17.519	18.285	19.086	19.923	20.799
10	16.722	17.549	18.420	19.337	20.304	21.321	22.393	23.521	24.709	25.959
11	19.561	20.655	21.814	23.045	24.349	25.733	27.200	28.755	30.404	32.150
12	22.713	24.133	25.650	27.271	29.002	30.850	32.824	34.931	37.180	39.581
13	26.212	28.029	29.985	32.089	34.352	36.786	39.404	42.219	45.244	48.497
14	30.095	32.393	34.883	37.581	40.505	43.672	47.103	50.818	54.841	59.196
15	34.405	37.280	40.417	43.842	47.580	51.660	56.110	60.965	66.261	72.035
16	39.190	42.753	46.672	50.980	55.717	60.925	66.649	72.939	79.850	87.442
17	44.501	48.884	53.739	59.118	65.075	71.673	78.979	87.068	96.022	105.93
18	50.396	55.750	61.725	68.394	75.836	84.141	93.406	103.74	115.27	128.12
19	56.939	63.440	70.749	78.969	88.212	98.603	110.28	123.41	138.17	154.74
20	64.203	72.052	80.947	91.025	102.44	115.38	130.03	146.63	165.42	186.69
25	114.41	133.33	155.62	181.87	212.79	249.21	292.10	342.60	402.04	471.98
30	199.02	241.33	293.20	356.79	434.75	530.31	647.44	790.95	966.71	1,181.9
35	341.59	431.66	546.68	693.57	881.17	1,120.7	1,426.5	1,816.7	2,314.2	2,948.3
40	581.83	767.09	1,013.7	1,342.0	1,779.1	2,360.8	3,134.5	4,163.2	5,529.8	7,343.9
50	1,668.8	2,400.0	3,459.5	4,994.5	7,217.7	10,436	15,090	21,813	31,515	45,497

Present value interest factor of an (ordinary) annuity of Re 1 per period at i% for n periods, PVIFA(i,n).

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145
11	10.368	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495
12	11.255	10.575	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814
13	12.134	11.348	10.635	9.986	9.394	8.853	8.358	7.904	7.487	7.103
14	13.004	12.106	11.296	10.563	9.899	9.295	8.745	8.244	7.786	7.367
15	13.865	12.849	11.938	11.118	10.380	9.712	9.108	8.559	8.061	7.606
16	14.718	13.578	12.561	11.652	10.838	10.106	9.447	8.851	8.313	7.824
17	15.562	14.292	13.166	12.166	11.274	10.477	9.763	9.122	8.544	8.022
18	16.398	14.992	13.754	12.659	11.690	10.828	10.059	9.372	8.756	8.201
19	17.226	15.678	14.324	13.134	12.085	11.158	10.336	9.604	8.950	8.365
20	18.046	16.351	14.877	13.590	12.462	11.470	10.594	9.818	9.129	8.514
25	22.023	19.523	17.413	15.622	14.094	12.783	11.654	10.675	9.823	9.077
30	25.808	22.396	19.600	17.292	15.372	13.765	12.409	11.258	10.274	9.427
35	29.409	24.999	21.487	18.665	16.374	14.498	12.948	11.655	10.567	9.644
40	32.835	27.355	23.115	19.793	17.159	15.046	13.332	11.925	10.757	9.779
50	39.196	31.424	25.730	21.482	18.256	15.762	13.801	12.233	10.962	9.915

Contd….

Period	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528
3	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106
4	3.102	3.037	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589
5	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991
6	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326
7	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605
8	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837
9	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031
10	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192
11	6.207	5.938	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327
12	6.492	6.194	5.918	5.660	5.421	5.197	4.988	4.793	4.611	4.439
13	6.750	6.424	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533
14	6.982	6.628	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611
15	7.191	6.811	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675
16	7.379	6.974	6.604	6.265	5.954	5.668	5.405	5.162	4.938	4.730
17	7.549	7.120	6.729	6.373	6.047	5.749	5.475	5.222	4.990	4.775
18	7.702	7.250	6.840	6.467	6.128	5.818	5.534	5.273	5.033	4.812
19	7.839	7.366	6.938	6.550	6.198	5.877	5.584	5.316	5.070	4.843
20	7.963	7.469	7.025	6.623	6.259	5.929	5.628	5.353	5.101	4.870
25	8.422	7.843	7.330	6.873	6.464	6.097	5.766	5.467	5.195	4.948
30	8.694	8.055	7.496	7.003	6.566	6.177	5.829	5.517	5.235	4.979
35	8.855	8.176	7.586	7.070	6.617	6.215	5.858	5.539	5.251	4.992
40	8.951	8.244	7.634	7.105	6.642	6.233	5.871	5.548	5.258	4.997
50	9.042	8.304	7.675	7.133	6.661	6.246	5.880	5.554	5.262	4.999

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